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ABSTRACT

This report analyzes the overall mathematics achievement and its potential relationship to instructional activities. National Assessment of Educational Progress (NAEP) assessed the mathematics achievement in seven content areas, five of which were administered at all three grade levels included in the assessment. This report focuses on the five content areas common to all grade levels and attempts to answer three questions: (1) Are there differences in mathematics achievement on any of the common content area subscales across levels of exposure to traditional instructional activities? (2) Are there differences in mathematics achievement on any of the common content area subscales across levels of computer use? and (3) Are there differences in mathematics achievement of any of the common content area subscales across levels of mathematics course taking? In addition to addressing the three major questions, the report presents comparisons between racial-ethnic group, gender, and type of school attended in an attempt to determine whether the differences in mathematics achievement typically found on these variables change when the levels of instructional activity, computer use, and mathematics course taking are held constant. The analyses in this study used achievement and background data from version 2.0 of the Public Use Data Tape for the 1985-1986 NAEP. This report includes the methodology and analysis, results, and conclusions. Several insights into potential relationships between mathematics-related instructional activities and student achievement are highlighted including the following: (1) daily exposure to some traditional instructional activity does appear to be associated with higher levels of mathematics achievement in specific content areas; (2) when the number of math courses an examinee reported having taken was held constant, non-Hispanic Whites still tended to have significantly higher achievement scores than Blacks and Hispanics; and (3) no gender difference in achievement was found at the third-grade level. Technical notes, detailed methodology, and the NAEP data in tabular form are appended. (KR)

NATIONAL CENTER FOR EDUCATION STATISTICS

Survey Report **September 1990**

National Assessment of Educational Progress, 1985–86

Mathematics Achievement and Classroom Instructional Activities

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Mathematics Achievement and Classroom Instructional Activities

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Elementary and Secondary Outcomes Division

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September 1990

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HIGHLIGHTS

In the 1985-86 National Assessment of Educational Progress, mathematics achievement and background data were collected on a nationally representative sample of American school-age children in grades 3, 7, and 11. These data provide insights into potential relationships between mathematics-related instructional activities and student achievement.

- Daily exposure to some traditional instructional activities does appear to be associated with higher levels of mathematics achievement in specific content areas. Frequency of exposure appears to make more difference at the 7th-grade level than at the 3rd- or 11th-grade levels. Doing math homework, working math problems alone, and using math textbooks regularly were the instructional activities most often associated with higher mathematics scores.

- Frequency of exposure to instructional activities appears to have the largest effect on the computational and term-recognition component of mathematics achievement and the smallest effect on the components of concept formation, problem solving, and symbolization of relationships.

- Using computers also appears to be associated with higher mathematics scores, particularly at the 11th-grade level. Examinees at both the 7th- and 11th-grade levels who reported having used a computer to play a game or solve a math problem had higher scores in several content areas, including the important areas of concept formation, problem solving, and symbolization of numeric relationships.

- Examinees who reported having taken more math courses had significantly higher mathematics achievement in all content areas than examinees who reported taking fewer courses.

- Non-Hispanic white examinees had significantly higher scores in all the content areas than black or Hispanic examinees. When exposure to traditional instructional activities was held constant, these differences persisted, except among examinees who were rarely exposed to math-related activities. When computer use was held constant, differential achievement between non-Hispanic whites and blacks persisted, but the differences between non-Hispanic white and Hispanic achievement diminished somewhat.

- When the number of math courses an examinee reported having taken was held constant, non-Hispanic whites still

tended to have significantly higher achievement scores than blacks and Hispanics.

- No gender differences in achievement were found at the 3rd-grade level, but girls did significantly better than boys in the computational and term recognition area at grade 7, and boys did significantly better than girls in measurement and higher level conceptual skills at grade 11. When traditional instructional activities and computer use were held constant, the 7th-grade gender differences disappeared. In grade 11, however, boys continued to outperform girls on measurement skills (in comparisons involving instructional activities) and on higher level conceptual skills (in comparisons involving computer use).

- When the number of math courses taken was held constant, 11th-grade boys still had higher achievement than 11th-grade girls in the data organization and interpretation content area (when one or two courses had been taken) and in the measurement and higher level applications content area (when three or four courses had been taken).

- Examinees who attended Catholic and nonparochial private schools had significantly higher achievement on most of the mathematics content areas studied at each of the three grade levels. When exposure to traditional instructional activities was held constant, however, no significant differences in mathematics achievement were found between public and private school examinees.

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INTRODUCTION

Concern has been increasing in the education community over results from recent studies which suggest that American students are behind their counterparts in other countries in almost every aspect of mathematics achievement (Burstein and Hawkins 1986; Lapointe et al. 1989; McKnight et al. 1987; Stevenson et al. 1986). Researchers attribute this lower level of achievement to a number of sources: low emphasis on mathematics, ability grouping in U.S. schools, repetitive mathematics curriculums, teachers' beliefs and attitudes about learning math (McKnight et al. 1987), and classroom instructional activities (Brophy and Good 1986).

The National Assessment of Educational Progress (NAEP) is a rich source of information on the academic skills of American children and the changing levels of these skills over time. The NAEP database also contains a substantial amount of information on the backgrounds and attitudes of examinees. A major purpose behind the collection of background data in NAEP is to facilitate the search for variables that affect student achievement. Although survey data cannot establish cause-effect relationships, analysis of data from a nationally representative sample like NAEP can help point out directions for controlled research studies and isolate areas where changes in classroom or school-level procedures might prove fruitful.

One important area of interest to educational policymakers is the impact of specific instructional activities on student achievement; a subset of the NAEP background questions deals with the frequency of student exposure to a variety of such activities. The Mathematics Report Card: Are We Measuring Up? (Dossey et al. 1988) presented data on the percentage of students who reported being exposed to a range of instructional activities and who also scored in the upper and lower quartiles on the mathematics assessment. This analysis focused on overall mathematics achievement and its potential relationship to instructional activities. It did not, however, attempt to determine whether instructional activities have a differential impact on specific components of math achievement.

NAEP assessed mathematics achievement in seven content areas, five of which were administered at all three grade levels included in the assessment. This report focuses on the five content areas common to all grade levels and attempts to answer three questions:

- Are there differences in mathematics achievement on any of the common content area subscales across levels of exposure to traditional instructional activities?
- Are there differences in mathematics achievement on any of the common content area subscales across levels of computer use?

- Are there differences in mathematics achievement on any of the common content area subscales across levels of mathematics course taking?

In addition to addressing the three major questions, the report presents comparisons between racial-ethnic group, gender, and type of school attended in an attempt to determine whether the differences in mathematics achievement typically found on these variables change when the levels of instructional activity, computer use, and mathematics course taking are held constant.

METHODOLOGY AND ANALYSIS

The analyses in this study used achievement and background data from version 2.0 of the Public Use Data Tape for the 1985-86 NAEP. These data constitute a representative sample of American school-age children in grades 3, 7, and 11. Data from all three grades were used for students who (1) received mathematics test items and (2) responded to the background items considered. Mean sample sizes were 10,900 for grade 3; 12,100 for grade 7; and 11,500 for grade 11. It should be noted, however, that each examinee in the NAEP sample receives a subset of the mathematics items. Therefore, sample sizes in any particular table of this report are substantially lower than the total number of students at that grade level who were tested in mathematics. For grades 3 and 7, all examinees were included in the tabulations because at these grade levels most students are taking math (only 1 percent of the grade 7 sample were not taking a math course). For grade 11, however, 22 percent of the examinees said they were not enrolled in a math course. Only those examinees who reported that they were currently taking math were included in the grade 11 analysis. Specific information about the NAEP design, calculation of the independent and dependent variables, and standard errors is presented in the appendix.

Nine of the NAEP background items that asked examinees to report the frequency with which they were exposed to traditional instructional activities (e.g., watching the teacher work problems on the board or using a math workbook) were used in the analysis. Ten NAEP background items that asked examinees about their use and programming of computers were also selected. In addition, the number of mathematics courses that examinees reported having taken was totaled and these data were used as an additional background variable. Data on the traditional instructional activities were available from all three grade levels (except for the question on textbook usage, which was asked of grades 7 and 11 only). Data on computer use were available only for 7th- and 11th-grade examinees, and data on the number of math courses taken were available for 11th grade only. Figure 1 contains a list of the background items used and the grade levels to which they apply.

Test items on the NAEP mathematics assessment were grouped into subscales by content area. The subscales have no absolute meaning in the sense that a given amount of learning on one subscale equals the same amount of learning on other subscales. The subscales do, however, measure how students at a particular grade level are doing in a particular content area. The content areas covered in the NAEP mathematics assessment are discussed at length in Math Objectives: 1985-86 Assesment (NAEP 1984). Briefly, however, the five subscales in this tabulation were as follows:

- "Fundamental Methods." This subscale included exercises covering the basic tools of mathematics: deductive and inductive proof, logic, problem-solving strategies, and empirical induction.

- "Data Organization and Interpretation." This subscale included exercises to assess organizing, analyzing, and interpreting data, including determining measurement of central tendency and of spread.

- "Measurement." This subscale included exercises to assess the development of concepts of measurement, equivalence, and instrument reading (e.g., length, time, temperature, mass and weight, area and volume, angles, scale drawing, and money).

- "Numbers and Operations: Knowledge and Skills." This subscale included exercises that measure knowledge of words, symbols, and figures and the skills of performing straightforward computations with whole numbers, common fractions, decimals, and percents.

- "Numbers and Operations: Higher Level Applications." This subscale included exercises to measure a deeper understanding of the concepts and relationships between and among whole numbers, fractions, decimals, and percents. Problem-solving processes are stressed, as are screening relevant from irrelevant information, recognizing patterns, and symbolizing relationships.

Figure 2 presents the total number of test items associated with each subscale and the average number of items an examinee who was tested on that subscale received.

The columns of tables 1 through 22 display the percentage of items on each of the five subscales that an examinee answered correctly, weighted to reflect that examinee's probability of selection and averaged across all examinees. In accordance with National Center for Education Statistics standards, percent correct values were not included for cells which contained fewer than 30 students; in such cells the entry "N < 30" appears.

FIGURE 1

NAEP Background Items Used

Traditional Instructional Activities Questions:

(1) How often do you watch your teacher work mathematics problems at the board? (Grades 3, 7, 11)

(2) How often do you work mathematics problems at the board? (Grades 3, 7, 11)

(3) How often do you use a mathematics textbook? (Grades 7, 11)

(4) How often do you do mathematics homework? (Grades 3, 7, 11)

(5) How often do you work mathematics problems alone? (Grades 3, 7, 11)

(6) How often do you work mathematics problems in small groups? (Grades 3, 7, 11)

(7) How often do you use a mathematics workbook? (Grades 3, 7, 11)

(8) How often do you take mathematics tests? (Grades 3, 7, 11)

(9) How often do you listen to a mathematics lesson explained? (Grades 3, 7, 11)

Computer Utilization Questions:

(1) Did you ever study mathematics through computer instruction? (Grades 7, 11)

(2) Did you ever use a computer to solve a mathematics problem? (Grades 7, 11)

(3) Did you ever use a computer to play a game? (Grades 7, 11)

(4) Did you ever use a computer to solve a linear programming Problem? (Grades 7, 11)

(5) Did you ever use a computer to perform statistical analysis? (Grades 7, 11)

(6) Did you ever use a computer to process business, science, social information? (Grades 7, 11)

(7) Did you ever write a program to solve a mathematics problem? (Grades 7, 11)

(8) Did you ever write a program to play a game? (Grades 7, 11)

(9) Did you ever write a program to solve a linear programming problem? (Grades 7, 11)

(10) Did you ever write a program to perform statistical analysis? (Grades 7, 11)

(11) Did you ever write a program to process business, science, social information? (Grades 7, 11)

FIGURE 2

Total Number of Items on NAEP Mathematics Subscales and Average Number Taken by Each Examinee

	Grade 3		Grade 7		Grade 11	
	Total Items	Average Number of Items Taken	Total Items	Average Number of Items Taken	Total Items	Average Number of Items Taken
Subject Areas:						
Fundamental Methods	102	4.1	150	6.0	287	8.2
Data Organization & Interpretation	96	5.1	147	5.3	183	5.7
Measurement	162	5.8	306	9.6	355	8.5
Numbers & Operations: Knowledge & Skills	180	7.2	396	12.4	523	13.4
Numbers & Operations: Higher-level Applications	156	5.6	455	14.2	508	12.1

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1986-86 MATHEMATICS ASSESSMENT

The rows of tables 1 through 22 display possible responses to background questions selected (e.g., "How often do you do mathematics homework?"). Each table presents one background question, broken down by race-ethnicity, gender, and type of school the examinee attends. The "nonpublic" school category includes both parochial and nonparochial private schools. Subcategories of the row variables, race/ethnicity and type of school, were excluded from the tabulation if the number of students they contained rarely or never exceeded the threshold sample size of 30 students per cell. Consequently, the totals for these two row variables do not sum to the overall totals presented at the top of each table.

The average percent correct estimates presented here were weighted to represent all students enrolled in American schools in 1985-86 at a particular grade level. It should be noted, however, that some students were excluded from the NAEP sample by their school administrators because of limited English proficiency or physical or educational handicaps. In this analysis, no attempt was made to impute mathematics achievement scores for these excluded students.

RESULTS

Main Effects: Traditional Instructional Activities

Significant differences in mathematics achievement were found between levels of exposure to several of the traditional instructional activities considered. Figure 3 shows the specific subscales for which significant differences were found at each grade level. In grade 3, significantly higher average percent correct scores were found for examinees who reported daily exposure to four of the eight instructional activities considered (at that grade level). For three of the four activities, significantly higher achievement was found for students reporting both daily and weekly exposure to the practice in question.

Seventh graders appear to be the most directly affected by frequency of exposure to traditional instructional activities; achievement was significantly higher for seven of the nine activities considered in grade 7. Doing mathematics homework appears to be the most fruitful of the instructional activities considered for seventh graders; examinees who reported doing math homework weekly had higher average percent correct scores on four of the five subscales, and those who reported doing math homework daily had significantly higher scores on all five subscales.

Frequency of exposure to traditional activities appears to have less impact on 11th-grade examinees, but significantly higher achievement was found on at least one subscale for five of the nine instructional activities considered. Significant differences at the 11th-grade level were found only among examinees who reported daily exposure to a particular

FIGURE 3

NAEP Mathematics Subscales for Which Significant Differences in Achievement Were Found by Grade Level and Traditional Instructional Activity *

GRADE LEVEL INSTRUCTIONAL ACTIVITY	FUNDAMENTAL METHODS	DATA ORGANIZATION & INTERPRETATION	MEASUREMENT	NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS	NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS
Grade 3					
Work Math Problems Alone				X **	
Use Math Workbook				X	
Listen to Math Lesson Explained		X **			
Watch Teacher Work Math Problems at the Board				X **	
Grade 7					
Work Math Problems Alone	X		X	X	
Use Math Textbook	X		X	X **	
Do Math Homework	X **	X **	X **	X **	X
Use Math Workbook	X ****				
Listen to Math Lesson Explained				X **	
Watch Teacher Work Math Problems at the Board				X **	
Take Math Tests				X ***	
Grade 11					
Work Math Problems Alone		X			
Use Math Textbook					X
Do Math Homework		X		X	
Watch Teacher Work Math Problems at the Board	X				
Work Math Problems at the Board Yourself		X ****			

* Unless otherwise specified, the analyses reported compare exposure at a given level (daily, weekly, etc.) to lack of exposure (never).

X-Achievement significantly higher for examinees reporting daily exposure to the instructional activity listed.
** Achievement significantly higher for examinees reporting BOTH DAILY AND WEEKLY exposure.
*** Achievement significantly higher for examinees reporting BOTH WEEKLY AND LESS THAN WEEKLY exposure.
**** Achievement significantly higher for examinees who reported LESS THAN WEEKLY exposure ONLY.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

instructional activity, whereas weekly exposure also showed some significant differences at the third- and seventh-grade levels.

Of the five subscales considered, the "Numbers and Operations: Knowledge and Skills" subscale seems to be the most directly related to the frequency of instructional activities at all three grade levels. This subscale involves knowledge of mathematical terms, figures, and symbols and the ability to perform straightforward calculations with whole numbers, decimals, fractions, and percents. Conversely, the "Numbers and Operations: Higher Level Applications" subscale appears to be the least directly related to the instructional activities considered. This subscale attempts to measure deeper understanding of the relationships among types of numbers and stresses problem solving, pattern recognition, and the ability to symbolize relationships and separate relevant from irrelevant information.

Significant differences in math achievement were found for three additional instructional activities. Working math problems in small groups, using math workbooks, and working math problems at the board were not listed in figure 3 because exposure to these instructional activities appears to be inversely related to achievement. In grades 3 and 7, examinees who reported working math problems in small groups daily had significantly lower average percent correct scores than examinees who reported that they never worked in small groups. Significantly lower scores were found on all five subscales in grade 3 and on three of the five subscales in grade 7 ("Fundamental Methods," "Measurement," and "Numbers and Operations: Knowledge and Skills") for examinees who reported working math problems in small groups. This result is somewhat surprising, because previous research suggests that working in small groups is positively related to achievement. In The Mathematics Report Card, however, Dossey and associates (1988) found that lower quartile third and seventh graders were more likely to work math problems in small groups than upper quartile examinees from the same grade level. This finding suggests that working in small groups may be an approach that is heavily used with remedial or low-ability students.

In grade 11, examinees who reported using math workbooks daily had significantly lower scores on three of the five subscales ("Data Organization and Interpretation," "Measurement," and "Numbers and Operations: Higher Level Applications") than examinees who reported that they never used math workbooks. Using math workbooks was positively related to achievement in grade 3, but negatively related in grades 7 (no significant differences) and 11. These findings suggest that workbooks are probably used less frequently in upper grade mathematics courses and that by grade 11, only remedial and low-ability students are using workbooks daily.

In grade 7, examinees who reported working math problems at the board daily also had significantly lower scores on one of the five subscales ("Fundamental Methods") than examinees who never worked problems at the board. Working math problems at the board may also be an activity that is typically confined to remedial classes, because students who reported engaging in this activity daily had lower (although not significantly lower) achievement scores at all three grade levels.

Main Effects: Computer Use

Two types of computer use questions were considered in this study. The first asked if examinees had ever "used" a computer to perform various tasks; the second asked if they had ever "written" a computer program to perform those tasks. The results of these analyses are summarized in figure 4. Dossey and colleagues (1988) reported that access to computers in the school setting was related to higher overall math achievement in the 17-year-old cohort, but not in the 13-year-old cohort. Figure 4 indicates that this effect holds up across specific questions about computer use because fewer significant differences in achievement were found for 7th graders than for 11th graders.

The results in figure 4 indicate clearly that examinees who report having used a computer or written a computer program tend to have higher average percent correct scores on most of the math subscales in grade 11 and on some of the subscales in grade 7. An important consideration in evaluating these results, however, is the percentage of examinees who reported computer use in the first place. Dossey and associates (1988) found that more examinees in the upper quartile in overall math achievement tended to report using computers and writing computer programs. Figure 5 shows the percentage of students at each grade level who answered yes to each of the computer use questions considered. Figure 5 shows that the majority of examinees had not used computers in the manner described by the background questions. This finding suggests that, although significantly higher achievement was found at the 11th-grade level for most of the computer-use questions, these results may represent an elite group of students who are interested in computers, rather than indicating a potential relationship between computer use and content area achievement in math.

In addition to these more rarefied results, however, significant differences in achievement were also found in both grade 7 and grade 11 on two of the items with the highest percentages of positive examinee response. Examinees who reported having used a computer either to solve a math problem or to play a game had significantly higher average percent correct scores on two of the five subscales in grade 7, and on four and five of the five subscales, respectively, in grade 11. In grade 11, significantly higher achievement was also found on one of the two programming questions for which a reasonably high percentage of examinees

FIGURE 4

NAEP Mathematics Subscales for Which Significant Differences in Achievement Were Found by Grade Level and Computer Utilization *

GRADE LEVEL INSTRUCTIONAL ACTIVITY	FUNDAMENTAL METHODS	DATA ORGANIZATION & INTERPRETATION	MEASUREMENT	NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS	NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS
Grade 7					
Use Computer to Solve a Math Problem		X			X
Use Computer to Play a Game		X			X
Use Computer to Do Statistical Analysis			X		
Use Computer to Process Information			X		
Grade 11					
Use Computer to Solve a Math Problem	X		X	X	X
Use Computer to Play a Game	X	X	X	X	X
Use Computer to solve a Linear Programming Problem	X		X	X	X
Use Computer to Do Statistical Analysis	X	X	X	X	X
Use Computer to Process Information	X	X	X	X	X
Write a Computer Program to Solve a Math Problem	X		X	X	X
Write a Computer Program to Solve a Linear Programming Problem	X		X	X	X
Write a Computer Program to Do Statistical Analysis	X	X	X	X	X
Write a Computer Program to Process Information					X

* The analyses reported compare examinees who state that they have used computers in the manner specified to examinees who state that they have not.

X-Achievement significantly higher for examinees reporting that they had used computers in the manner specified.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

FIGURE 5

Percentage of Examinees Responding Positively to Computer Use Questions*

	Grade 7	Grade 11
Did You Ever Study Mathematics Through Computer Instruction?**	38 (1.5)	24 (1.4)
Did You Ever Use a Computer to Solve a Mathematics Problem?	64 (1.4)	53 (1.6)
Did You Ever Use a Computer to Play a Game?	93 (0.8)	93 (0.8)
Did You Ever Use a Computer to Solve a Linear Programming Problem?	16 (1.2)	19 (1.3)
Did You Ever Use a Computer to Perform Statistical Analysis?	25 (1.4)	36 (1.6)
Did You Ever Use a Computer to Process Business, Science, Social Information?	24 (1.3)	37 (1.6)
Did You Ever Write a Program to Solve a Mathematics Problem?	40 (1.5)	37 (1.6)
Did You Ever Write a Program to Play a Game?	58 (1.5)	45 (1.6)
Did You Ever Write a Program to Solve a Linear Programming Problem?	11 (1.0)	16 (1.2)
Did You Ever Write a Program to Perform Statistical Analysis?	16 (1.1)	26 (1.5)
Did You Ever Write a Program to Process Business, Science, Social Information?	14 (1.1)	23 (1.4)

* Standard errors appear in parentheses.

** The response range on these items was: Yes, No, I don't know.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 19[illegible]86 MATHEMATICS ASSESSMENT

responded positively (i.e., to "Did you ever write a computer program to solve a mathematics problem?"; 37 percent said yes). It is also worth noting that significantly higher achievement was found on the important "Numbers and Operations: Higher Level Applications" subscale for all the more well-represented computer use items at both the 7th- and the 11th-grade levels. Because improving students' understanding of higher order mathematical principles is of critical concern to American math educators, this finding may indicate that further research into the relationship between computer use and higher mathematical reasoning would be fruitful.

Two findings that are not presented in figure 4 are also worth noting. First, no significant difference in achievement was found at either grade level between examinees who reported having studied math through computerized instruction and examinees who reported not having been exposed to this approach. It should be noted in relation to this finding, however, that examinees were asked if they had "ever" studied math through computerized instruction. The use of "ever" allowed examinees to respond positively even if the computer-assisted instruction they had received was minimal or had occurred many years before. Because no information was available about how recent or how intensive the examinee's exposure to computerized instruction actually was, it seems inappropriate to attempt to draw conclusions from this finding.

The second finding that was not presented in figure 4 is perplexing. In grade 7, examinees who reported having written a computer program to solve a "linear programming" problem had lower achievement on all five subscales and significantly lower achievement on the "Data Organization and Interpretation" subscale than examinees who reported never having written this kind of program. Figure 5 indicates that only 11 percent of the 7th-grade examinees answered this question positively. This finding may simply suggest that better math students were more likely to realize that linear programming was a topic they had not been exposed to (and hence respond negatively) than poorer math students. Even if this interpretation is accurate, however, it does not explain why the mathematics achievement of these two groups was significantly different on only one of the five subscales. Our conclusion is that this result may have been due to chance and should therefore be interpreted with caution.

Main Effects: Number of Courses Taken

In addition to looking at traditional instructional activities and computer use, the total number of math courses taken was tabulated in an attempt to determine whether this variable appeared to be related to particular content area subscales (see table 21). As would be expected, the pattern that emerged was a straight linear increase. Examinees who had taken more math courses had significantly higher average percent correct scores

on all five subscales for all comparisons up to five to six math courses taken. No significant differences in achievement were found between examinees who reported having taken five or six math courses and examinees who reported having taken seven or more math courses, but the number of examinees in the latter category was very small. As was noted earlier, course-taking information was available only for 11th-grade examinees.

Gender Effects

Table 22 presents the marginal effects for gender, race and ethnicity, and type of school the examinee attended. These results indicate that girls had significantly higher achievement than boys on the "Numbers and Operations: Knowledge and Skills" subscale in grade 7 and boys had significantly higher achievement than girls on both the "Measurement" and the "Numbers and Operations: Higher Level Applications" subscales in grade 11. These findings are consistent with Dossey and colleagues' (1988) results on gender differences within mathematics content areas. When exposure to traditional instructional activities was held constant, no gender differences were found at grade 3 or grade 7. In grade 11, however, boys had significantly higher scores than girls on the "Measurement" subscale for three of the nine traditional activities considered (working math problems alone, using math textbooks, and watching the teacher work math problems at the board) even when level of exposure was held constant.

When computer use was held constant, no gender differences were found in grade 7. In grade 11, one difference was found. Boys had significantly higher scores than girls on the "Numbers and Operations: Higher Level Applications" subscale if they reported that they had written a computer program to play a game.

When number of math courses taken was held constant, boys still had significantly higher average percent correct scores than girls on the "Data Organization and Interpretation" subscale (when both sexes had taken one or two math courses) and on both the "Measurement" and the "Numbers and Operations: Higher Level Applications" subscale (for examinees with three to four math courses). This finding corroborates the finding in the marginal table 22 and suggests that boys' higher achievement in certain content areas may not be solely attributable to inequitable amounts of exposure to mathematics.

Race-Ethnicity Effects

Table 22 indicates that non-Hispanic white examinees had significantly higher scores on all five mathematics subscales than black or Hispanic examinees. When traditional instructional activities were held constant, these differences tended to hold up for those groups that reported daily exposure to the activities considered. Fewer differences between racial-ethnic

groups were found among examinees who reported less frequent exposure to math-related instructional activities.

When computer use was held constant, differences between non-Hispanic whites and blacks remained constant, but differences between non-Hispanic whites and Hispanics tended to diminish. Because no significant differences were found between black and Hispanic math achievement, even in the marginal comparisons, this finding may indicate that working with computers is particularly useful for Hispanics and that further research in this area could prove fruitful.

When the number of math courses taken was held constant, non-Hispanic whites still had significantly higher math achievement than blacks on all subscales for all levels of course taking (except when no math courses had been taken). Non-Hispanic whites also had significantly higher average percent correct scores than Hispanics on all levels of course taking in which Hispanics were well represented. It should be noted here that NAEP has no information on the content or the quality of the mathematics courses examinees report having attended. The finding on course work, therefore, may simply indicate that minority students are not receiving the same level of mathematics education that their majority counterparts receive.

School Type Effects

The results in table 22 indicate that examinees who attended nonpublic (i.e., private or Catholic) schools had significantly higher average percent correct scores on two of the five math subscales ("Fundamental Methods" and "Measurement") in grade 3, four of the five subscales (all except "Fundamental Methods") in grade 7, and three of the five subscales ("Measurement," "Numbers and Operations: Knowledge and Skills," and "Numbers and Operations: Higher Level Applications") in grade 11. When exposure to traditional instructional activities was held constant, however, no differences between public and nonpublic schools were found.

On the computer use questions, no significant differences were found in grade 7. In grade 11, however, significant differences were found on 9 of the 11 background questions. Figure 6 shows that examinees who attended nonpublic schools and answered no to the computer use questions listed had significantly higher average percent correct scores than public school examinees on the "Fundamental Methods" and "Measurement" subscales. Among examinees who answered yes to the computer use questions, however, only one significant difference was found. Nonpublic school examinees who reported having used a computer to play a game had significantly higher achievement on the "Measurement" subscale than similarly responding public school examinees. This finding suggests that increased exposure to computers may help

reduce the discrepancy in mathematics achievement between public and nonpublic school students.

When the number of math courses taken was held constant, no significant differences in math achievement were found between the public and nonpublic school students.

CONCLUSIONS

The results discussed above indicate that all three of the research questions defined in the introduction can be answered positively. Our findings suggest that doing mathematics homework, working mathematics problems alone, and using mathematics textbooks regularly may help improve student performance in the areas of computational and term-recognition skills. Exposure to traditional instructional activities, however, does not appear to be directly related to improved performance in the conceptual and symbolization skills students need to do well in more advanced math courses.

In the computer use portion of the study, our findings suggest that using computers to solve mathematics problems, and even using computers to play games, may help improve student performance in all the basic mathematics content areas, including higher level conceptual, problem-solving, and symbolization skills. It is important when evaluating the findings in this report to keep in mind that NAEP data contain no socioeconomic status information on examinees. This problem may be particularly relevant in relation to the computer use questions. Because students from more affluent backgrounds are more likely to have been exposed to computers both at home and at school, the findings on computer use may be confounded by socioeconomic status.

Comparisons among differing levels of mathematics course taking indicated that more course work in math was associated with significantly higher achievement in all content areas.

Although survey results are not an adequate basis from which to make causal inferences about student performance, the results of this study do suggest that controlled research in the areas of increased exposure to specific instructional activities and the use of computers to solve math and math-related problems could be a valuable step toward identifying productive approaches to improving the mathematics achievement of American school-age children.

FIGURE 6

NAEP Mathematics Subscales for Which Significant Differences in Achievement Were Found By Grade Level, Computer Utilization and Type of School Examinee Attends*

GRADE LEVEL INSTRUCTIONAL ACTIVITY	FUNDAMENTAL METHODS	DATA ORGANIZATION & INTERPRETATION	MEASUREMENT	NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS	NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS
Grade 11					
Study Math Through Computer Instruction	X		X		
Use Computer to Solve a Math Problem			X		
Use Computer to Play a Game			X **		
Use Computer to Solve a Linear Programming Proble	X		X		
Use Computer to Do Statistical Analysis	X				
Use Computer to Process Information			X		
Write a Computer Program to Solve a Math Problem	X		X		
Write a Computer Program to Solve a Linear Programming Problem	X		X		
Write a Computer Program to Process Information	X				

* The analyses reported compare examinees who state that they have used computers in the manner specified to examinees who state that they have not.

X--Achievement significantly higher for examinees attending NON-PUBLIC schools who reported they HAD NOT used computers in the manner specified.
**-Achievement significantly higher for examinees attending NON-PUBLIC schools who reported they HAD used computers in the manner specified.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

REFERENCES

Beaton, A., Mislevy, R., Kaplan, B., Sheehan, K. 1986. The Estimation of Population Characteristics from Matrix Sample Data. Princeton, NJ: Educational Testing Service.

Brophy, J., Good, T. 1986. "Teacher Behavior and Student Achievement," in Handbook of Research on Teaching. 3rd ed. Ed. M. C. Wittrock. New York: MacMillan.

Burstein, L., Hawkins, J. 1986. "An Analysis of Cognitive, Non-Cognitive, and Behavioral Characteristics of Students in Japan." International Association for Evaluation of Educational Achievement (IEA): Unpublished manuscript.

Dossey, J., Crosswhite, F., Grouws, D., Miller, M., Swafford, J. 1986. "Classroom Practices in Math Teaching in Effective and Ineffective Classrooms." IEA: Unpublished report.

Dossey, J., Mullis, I., Lindquist, M., Chambers, D. 1988. The Mathematics Report Card: Are We Measuring Up? Princeton, NJ: Educational Testing Service.

Lapointe, A., Mead, N., Phillips, G. 1989. A World of Difference: An International Assessment of Mathematics and Science. Princeton, NJ: Educational Testing Service.

McKnight, C., Crosswhite, F., Dossey, J., Kifer, E., Swafford, J., Travers, K., Cooney, T. 1987. The Underachieving Curriculum. Champaign, IL: Stipes Publishing Co.

National Assessment of Educational Progress. 1984. Math Objectives: 1985-86 Assessment. Princeton, NJ: Educational Testing Service.

Rogers, A., Kline, D., Norris, N., Johnson, E., Mislevy, R., Zwick, R., Kaplan, B. 1988. National Assessment of Educational Progress 1985-86 Public-Use Data Tapes Users' Guide Version 2.0. Princeton, NJ: Educational Testing Service.

Stevenson, H., Lee, S., Stigler, J. "Mathematics Achievement of Chinese, Japanese, and American Children." Science 231 (1980), 693-707.

APPENDIX

Technical Notes and Methodology

APPENDIX

Technical Notes and Methodology

The estimates produced in this tabulation are based on the 1985-86 mathematics assessment conducted as part of the National Assessment of Educational Progress (NAEP). Information concerning the study design, definitions of variables and items, missing data, and other technical issues is presented by Rogers and associates (1988).

This tabulation uses the NAEP data differently than they were used in The Mathematics Report Card: Are We Measuring Up? (Dossey et al. 1988). First, data were analyzed by grade level only, rather than by age of the student and grade level. Second, average percent correct scores were used rather than scale scores produced by item response theory models. Third, the standard errors presented in the tables were produced by using an approximate adjustment based on design effects rather than by the more exact, but also more complex, jackknife procedures. The calculation procedures for the scores and standard errors are discussed in this appendix, but it is important to note that because the approach to the data was different from the outset, the results in this tabulation do not duplicate those presented in The Mathematics Report Card.

All the items associated with each of the five subscales were used in the calculation of the average percent correct. The five content areas used were selected because their subscales were administered to examinees at all three grade levels. It is important to note, however, that the test items differed by grade level and the subscales in this tabulation were not equated across grades. The results presented here provide information about mathematics achievement within grade only and cannot be used to compare progress across grade levels in a particular content area.

It should also be noted that the design of the NAEP assessment is such that examinees in the sample were administered different numbers of items on each of the mathematics subscales. Some examinees, particularly at the third-grade level, received only one or two items on a given subscale. Although one or two items do not provide sufficient information to produce a reliable estimate of proficiency for a given examinee, we would typically expect the mean proficiency to be unbiased.

The columns of the tables represent the percent of items on each of the five subscales that an examinee answered correctly, weighted to reflect that examinee's probability of selection and averaged across all examinees. NAEP uses a complex sampling design in which all examinees are not presented with the same items. The percent correct scores in this tabulation represent

the number of items an examinee answered correctly on a given subscale divided by the total number of items he or she was presented with. Items that were left blank, whether omitted or not reached, were treated as incorrect responses in the analysis. It should be noted that not-reached items are not included in the denominator of the formula used to calculate the item-by-item response percentages presented in the Educational Testing Service (ETS) "Summary Tables" of the NAEP data (NAEP 1984). Because not-reached items are treated as incorrect in this tabulation, the results presented here do not exactly duplicate values calculated by averaging the item percentages in the "Summary Tables" for each subscale. Percent correct values were not included for cells in the tabulation that contained fewer than 30 examinees (N < 30 appears in these cells).

The rows of the tables represent possible responses to questions about instructional activities used in mathematics classes (e.g., "How often do you work mathematics problems at the board?"), which are part of the 1985-86 NAEP assessment. Each table presents overall results for an instructional activity question and then breaks down those results by race-ethnicity, gender, and type of school the examinee attends. Gender information was taken from school records, and information about type of school attended came from the sampling frame data tape. Race-ethnicity was derived from students' responses on the background questionnaire or from information recorded by the test administrator when no self-report information was available. The rules for deriving this variable are discussed at length in the NAEP Users' Guide. It should also be noted when the results presented on Hispanics are evaluated that examinees with limited English proficiency (in the opinion of their school administrators) were not included in the NAEP sample.

The NAEP data are nationally representative and statistically accurate, but the data are generated from a clustered, four-stage probability sample. Therefore, simple random sampling techniques frequently underestimate the true standard errors of these data. Sample sizes and standard errors corrected to account for the effects of the sample design are presented, by cell, in this tabulation. The standard errors in the tables and figures have been adjusted using the design effects procedure suggested by ETS and discussed at length in the NAEP Users' Guide. An average design effect of 2 was used in the adjustment. To conduct statistical tests comparing subgroups of interest, or to understand the quality of a particular estimate, readers should use the standard errors provided, rather than standard errors calculated using simple random sample procedures.

Two-tailed Z tests were used to verify that the differences discussed in the highlights section were statistically significant (alpha = 0.05). The Bonferroni procedure was used to adjust the level of significance to prevent the buildup of Type I error. The alpha level was adjusted separately for each of the

tables. Adjustment was based on the number of Z tests run for each dependent variable (i.e., each separate subscale). The results of these analyses are available from the author on request.

The Z tests on traditional instructional activities compared the achievement of examinees who reported daily, weekly, and less than weekly exposure with that of examinees who reported no exposure to the activity being considered. In the computer use analyses, the Z tests compared the achievement of examinees who reported they had used computers in the manner specified with that of examinees who reported they had not.

The data from grade 11 were restricted to examinees who said they were currently taking a mathematics course. This restriction severely limited the number of examinees who responded that they were rarely or never exposed to certain instructional activities (e.g., take mathematics tests or listen to mathematics lesson explained); therefore, many of the cells in tables 9.1 and 8.1 show fewer than 30 examinees.

TABLE 1.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU WATCH YOUR TEACHER WORK MATHEMATICS PROBLEMS AT THE BOARD?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN WATCH TEACHER WORK MATH PROBLEMS AT BOARD																		
DAILY	58	1.9	819	82	1.4	1146	58	1.7	1146	82	1.5	1146	69	1.6	1146	73	1.7	1146
WEEKLY	55	3.7	230	75	3.0	294	49	3.4	294	77	3.1	294	61	3.3	294	66	3.5	294
LESS THAN WEEKLY	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER	-	-	N<30	59	9.3	38	47	9.5	38	70	8.1	38	57	9.8	38	60	9.8	38
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	57	1.6	1094	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	71	1.5	1505
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	61	2.2	583	84	1.5	818	62	2.0	818	84	1.7	818	73	1.8	818	76	1.9	818
BLACK	45	5.2	126	71	4.1	172	37	4.4	172	73	4.4	172	51	4.5	172	60	4.9	172
HISPANIC	46	5.8	85	69	5.2	116	42	5.5	116	75	5.2	116	51	5.2	116	61	5.9	116
WEEKLY																		
WHITE	59	4.4	156	78	3.6	200	51	4.2	200	80	3.6	200	64	3.9	200	69	4.3	200
BLACK	33	9.0	32	63	8.9	39	30	8.5	39	67	9.7	39	39	9.4	39	52	10.2	39
HISPANIC	-	-	N<30	71	8.5	37	50	8.9	37	74	8.8	37	62	9.5	37	65	9.8	37
LESS THAN WEEKLY																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY GENDER OF EXAMINEE																		
DAILY																		
MALE	58	2.7	391	83	1.9	547	64	2.3	547	83	2.1	547	71	2.2	547	75	2.4	547
FEMALE	57	2.7	428	80	1.9	599	52	2.4	599	82	2.1	599	67	2.2	599	71	2.4	599
WEEKLY																		
MALE	58	4.9	125	73	4.1	161	51	4.6	161	76	4.3	161	62	4.3	161	66	4.8	161
FEMALE	51	5.6	105	78	4.4	133	46	5.0	133	79	4.5	133	59	5.0	133	66	5.3	133
LESS THAN WEEKLY																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	57	2.0	731	81	1.4	1032	57	1.8	1032	82	1.5	1032	68	1.6	1032	73	1.8	1032
NONPUBLIC	62	5.6	88	83	4.4	114	62	5.2	114	85	4.5	114	74	5.1	114	76	5.3	114
WEEKLY																		
PUBLIC	54	3.8	212	75	3.1	274	49	3.5	274	77	3.2	274	61	3.4	274	66	3.7	274
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
PUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	-	-	N<30	52	9.5	33	38	10.0	33	60	9.5	33	52	10.4	33	52	10.8	33
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 1.1a: HOW OFTEN DO YOU WATCH YOUR TEACHER WORK MATH PROBLEMS AT THE BOARD - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS (Z=2.24 FOR 2 TESTS AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WATCH TEACHER WORK MATH PROBLEMS AT THE BOARD - COMPARISONS						
DAILY/NEVER		2.434 *	1.175	1.486	1.184	1.291
WEEKLY/NEVER		1.669	0.202	0.814	0.385	0.539
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	2.741 *	3.072 *	5.124 *	2.327	4.469 *	2.973
WH/HISP	2.348	2.830 *	3.462 *	1.679	4.029 *	2.362
BL/HISP	-0.10	0.301	-0.62	-0.26	0.101	-0.14
WEEKLY						
WH/BL	2.541	1.581	2.311	1.205	2.472	1.532
WH/HISP		0.685	0.122	0.611	0.244	0.393
BL/HISP		-0.71	-1.67	-0.51	-1.69	-0.90
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
M/F	0.340	1.326	3.520 *	0.445	1.383	1.302
WEEKLY						
M/F	0 860	-0.90	0.796	-0.53	0.395	-0.07
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
DAILY						
PUB/NPUB	-0.87	-0.30	-0.85	-0.54	-1.05	-0.59
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 1.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU WATCH YOUR TEACHER WORK MATHEMATICS PROBLEMS AT THE BOARD?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN WATCH TEACHER WORK MATH PROBLEMS AT THE BOARD																		
DAILY	43	1.4	1721	60	1.8	865	55	1.5	1721	56	1.2	1717	47	1.5	1721	50	1.6	1721
WEEKLY	45	2.7	478	57	3.5	233	54	2.8	478	53	2.3	478	47	2.9	478	50	2.9	478
LESS THAN WEEKLY	36	7.9	52	36	11.6	20	48	8.2	52	48	6.5	52	41	8.8	52	43	8.8	52
NEVER	33	7.7	51	41	10.2	26	48	8.2	52	30	6.3	51	40	8.4	52	41	8.4	52
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	48	1.9	990	65	2.4	499	60	2.0	990	60	1.6	988	50	2.0	990	55	2.1	990
BLACK	28	2.8	379	47	4.0	181	41	3.2	379	43	2.6	379	34	3.1	379	37	3.3	379
HISPANIC	30	3.4	281	51	4.3	149	43	3.7	281	46	3.1	279	36	3.7	281	40	3.8	281
WEEKLY																		
WHITE	50	3.6	284	58	4.3	146	58	3.7	284	57	2.9	284	50	3.7	284	54	3.8	284
BLACK	25	5.8	88	52	8.7	39	40	6.8	88	41	5.3	88	37	6.6	88	37	6.8	88
HISPANIC	31	6.2	85	51	8.7	35	44	6.9	85	40	5.2	85	33	6.7	85	39	7.0	85
LESS THAN WEEKLY																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY GENDER OF EXAMINEE																		
DAILY																		
MALE	41	2.0	858	59	2.6	404	55	2.1	858	56	1.7	857	46	2.1	858	50	2.2	858
FEMALE	44	2.1	863	60	2.4	461	55	2.1	863	56	1.7	860	47	2.2	863	51	2.2	863
WEEKLY																		
MALE	41	3.7	246	56	4.4	130	53	4.0	246	50	3.2	246	45	4.0	246	48	4.1	246
FEMALE	48	3.9	232	59	5.5	103	55	4.1	232	57	3.2	232	48	4.1	232	52	4.2	232
LESS THAN WEEKLY																		
MALE	29	10.0	33	-	-	N<30	37	10.3	33	42	8.7	33	37	10.9	33	37	11.0	33
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
MALE	33	9.6	34	-	-	N<30	46	9.8	35	32	8.6	34	41	10.3	35	42	10.1	35
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	42	1.5	1584	60	1.9	790	54	1.6	1584	55	1.3	1580	46	1.6	1584	50	1.6	1584
NONPUBLIC	47	5.3	136	64	6.5	74	61	5.2	136	62	4.3	136	52	5.5	136	56	5.6	136
WEEKLY																		
PUBLIC	45	2.8	447	56	3.6	221	54	2.9	447	52	2.3	447	46	3.0	447	50	3.0	447
NONPUBLIC	44	10.9	31	-	-	N<30	54	11.9	31	63	8.4	31	51	11.5	31	54	11.9	31
LESS THAN WEEKLY																		
PUBLIC	36	8.0	50	-	-	N<30	47	8.3	50	46	6.7	50	42	8.9	50	44	8.9	50
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	30	7.9	48	-	-	N<30	41	9.0	48	31	7.0	48	34	9.0	48	35	9.0	48
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 1.2a: HOW OFTEN DO YOU WATCH YOUR TEACHER WORK MATH PROBLEMS AT THE BOARD - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS (Z=2.4 FOR 3 TESTS AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WATCH TEACHER WORK MATH PROBLEMS AT THE BOARD COMPARISONS						
DAILY/NEVER	1.253	1.832	0.789	4.018 *	0.798	1.050
WEEKLY/NEVER	1.424	1.539	0.631	3.450 *	0.767	0.963
LT WEEKLY/NEVER	0.236	-0.29	-0.06	1.992	0.115	0.156
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	5.831 *	3.800 *	5.099 *	5.653 *	4.377 *	4.722
WH/HISP	4.598 *	2.667 *	3.941 *	4.190 *	2.900 *	3.367
BL/HISP	-0.52	-0.79	-0.57	-0.59	-0.84	-0.73
WEEKLY						
WH/BL	3.673 *	0.534	2.246	2.557	1.718	2.092
WH/HISP	2.606	0.657	1.774	2.841 *	2.123	1.890
BL/HISP	-0.73	0.097	-0.36	0.215	0.351	-0.12
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
M/F	-0.94	-0.27	-0.20	-0.32	-0.19	-0.38
WEEKLY						
M/F	-1.27	-0.45	-0.42	-1.41	-0.56	-0.73
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB	-0.76	-0.66	-1.18	-1.44	-1.05	-1.00
WEEKLY						
PUB/NPUB	0.053		0.008	-1.23	-0.38	-0.31
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 1.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU WATCH YOUR TEACHER WORK MATHEMATICS PROBLEMS AT THE BOARD?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN WATCH TEACHER WORK MATH PROBLEMS AT BOARD																		
DAILY	28	1.5	1314	56	2.1	662	34	1.7	1314	34	1.2	1314	43	1.6	1314	36	1.7	1314
WEEKLY	30	2.1	735	57	2.8	352	36	2.3	735	35	1.6	735	47	2.2	735	39	2.3	735
LESS THAN WEEKLY	27	6.3	77	44	8.7	39	36	7.0	77	32	4.9	77	45	6.5	77	36	7.1	77
NEVER	24	4.4	143	49	5.5	78	30	4.9	143	24	3.7	143	39	4.7	143	31	5.0	143
NOT REPORTED	10	4.2	75	30	7.7	34	10	4.4	75	16	4.3	75	15	4.1	75	13	4.8	75
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	31	2.0	806	61	2.7	408	36	2.2	806	36	1.6	806	46	2.1	806	39	2.2	806
BLACK	18	2.9	275	40	4.4	143	27	3.5	275	26	2.7	275	36	3.5	275	28	3.6	275
HISPANIC	22	3.9	183	43	6.0	90	28	4.3	183	32	3.4	183	35	4.3	183	30	4.5	183
WEEKLY																		
WHITE	33	2.6	469	63	3.4	240	40	2.9	469	37	2.1	469	51	2.8	469	42	3.0	469
BLACK	21	4.7	117	38	7.7	50	25	5.2	117	24	3.6	117	40	5.6	117	28	5.6	117
HISPANIC	20	4.5	122	33	7.0	52	26	5.1	122	27	3.6	122	38	5.2	122	28	5.3	122
LESS THAN WEEKLY																		
WHITE	27	8.6	42	-	-	N<30	39	9.8	42	27	7.0	42	44	8.4	42	36	9.7	42
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	25	6.1	81	52	8.3	38	33	6.8	81	27	4.8	81	42	6.4	81	34	6.9	81
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY GENDER OF EXAMINEE																		
DAILY																		
MALE	29	2.2	615	56	3.1	296	34	2.5	615	34	1.8	615	42	2.4	615	36	2.5	615
FEMALE	26	2.0	699	56	2.8	366	34	2.3	699	35	1.7	699	44	2.2	699	36	2.4	699
WEEKLY																		
MALE	32	2.8	413	59	3.6	204	37	3.0	413	35	2.1	413	49	3.0	413	40	3.1	413
FEMALE	27	3.0	322	55	4.3	148	35	3.4	322	34	2.4	322	46	3.3	322	37	3.5	322
LESS THAN WEEKLY																		
MALE	25	8.4	43	-	-	N<30	37	9.6	43	29	5.9	43	42	8.9	43	34	9.6	43
FEMALE	29	9.4	34	-	-	N<30	34	10.1	34	36	8.4	34	50	9.4	34	37	10.5	34
NEVER																		
MALE	25	5.7	88	56	6.6	50	31	6.3	88	29	4.7	88	41	5.9	88	33	6.4	88
FEMALE	22	7.1	55	-	-	N<30	27	7.9	55	18	5.9	55	35	7.9	55	27	8.0	55
WATCH TEACHER WORK MATH PROBLEMS AT BOARD BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	28	1.6	1183	56	2.2	591	34	1.8	1183	34	1.3	1183	43	1.7	1183	36	1.8	1183
NONPUBLIC	28	4.9	131	56	6.3	71	34	5.4	131	36	4.0	131	46	5.2	131	38	5.5	131
WEEKLY																		
PUBLIC	30	2.1	681	56	2.9	326	37	2.4	681	35	1.7	681	47	2.3	681	39	2.4	681
NONPUBLIC	25	7.5	53	-	-	N<30	41	8.8	53	35	5.9	53	48	8.1	53	40	8.9	53
LESS THAN WEEKLY																		
PUBLIC	25	6.4	70	38	8.9	36	35	7.5	70	27	5.3	70	40	6.9	70	33	7.4	70
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	23	4.6	131	52	5.8	72	29	5.1	131	24	3.9	131	38	5.0	131	31	5.2	131
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 1.3a: HOW OFTEN DO YOU WATCH YOUR TEACHER WORK MATH PROBLEMS AT THE BOARD - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WATCH TEACHER WORK MATH PROBLEMS AT THE BOARD - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	0.893	1.257	0.787	2.556 *	0.916	1.020
WEEKLY/NEVER	1.265	1.381	1.216	2.572 *	1.664	1.413
LT WEEKLY/NEVER	0.390	-0.47	0.665	1.186	0.845	0.518
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	3.588 *	4.184 *	2 214	3.372 *	2.465	2.576
WH/HISP	2.012	2.848 *	1.748	1.153	2.221	1.847
BL/HISP	-0.78	-0.37	-0.10	-1.43	0.107	-0.27
WEEKLY						
WH/BL	2.267	2.904 *	2.491	3.160 *	1.684	2.252
WH/HISP	2.433	3.755 *	2.378	2.441	2.225	2.305
BL/HISP	0.076	0 471	-0.12	-0.58	0.340	-0.02
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	0 956	-0.11	0.147	-0.56	-0.73	-0.02
WEEKLY						
M/F	1.188	0 712	0.392	0 341	0.613	0.575
LESS THAN WEEKLY						
M/F	-0.32		0.236	-0.65	-0.60	-0.21
NEVER						
M/F	0.329		0.405	1.431	0.647	0.584
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS .05)						
DAILY						
PUB/NPUB	-0.05	0.045	-0.03	-0.40	-0.56	-0.27
WEEKLY						
PUB/NPUB	0.679		-0.54	-0.04	-0.13	-0.16
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 2.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS AT THE BOARD?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS AT THE BOARD																		
DAILY	49	4.3	169	77	3.3	235	54	3.9	235	79	3.5	235	63	3.7	235	69	4.0	235
WEEKLY	60	3.2	284	80	2.4	384	55	2.9	384	81	2.5	384	67	2.7	384	72	2.9	384
LESS THAN WEEKLY	62	4.3	143	87	2.8	209	59	3.8	209	83	3.3	209	71	3.4	209	75	3.8	209
NEVER	56	2.5	489	78	1.9	660	55	2.2	660	80	2.0	660	67	2.1	660	71	2.3	660
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	57	1.6	1094	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	71	1.5	1505
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	52	5.0	116	81	3.8	155	58	4.8	155	81	4.1	155	68	4.5	155	72	4.7	155
BLACK	41	8.7	41	69	8.5	43	39	8.9	43	71	9.3	43	53	9.3	43	59	10.0	43
HISPANIC	-	-	N<30	58	9.2	41	41	9.0	41	73	8.5	41	43	8.9	41	58	9.9	41
WEEKLY																		
WHITE	66	3.7	196	82	2.8	260	61	3.5	260	84	2.9	260	71	3.3	260	75	3.5	260
BLACK	47	8.1	46	72	6.3	63	29	6.9	63	74	7.2	63	50	7.2	63	59	8.1	63
HISPANIC	48	10.3	31	70	7.9	45	46	8.0	45	72	8.2	45	55	8.5	45	62	9.1	45
LESS THAN WEEKLY																		
WHITE	67	5.1	104	89	3.1	154	62	4.6	154	85	3.8	154	74	4.0	154	77	4.4	154
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	60	3.0	352	81	2.1	484	59	2.6	484	82	2.2	484	71	2.4	484	74	2.6	484
BLACK	43	7.2	65	67	6.2	83	39	6.3	83	71	6.4	83	46	6.5	83	58	7.1	83
HISPANIC	48	7.0	58	68	6.6	71	41	7.2	71	73	6.9	71	53	6.8	71	60	7.6	71
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY GENDER OF EXAMINEE																		
DAILY																		
MALE	53	5.8	88	78	4.4	123	58	5.2	123	79	4.7	123	64	5.1	123	70	5.4	123
FEMALE	44	6.4	81	75	4.9	112	49	5.7	112	78	5.1	112	63	5.4	112	66	5.9	112
WEEKLY																		
MALE	61	4.5	143	80	3.3	196	59	3.9	196	80	3.5	196	68	3.8	196	72	4.0	196
FEMALE	59	4.5	141	79	3.5	188	51	4.1	188	82	3.6	188	65	4.0	188	71	4.3	188
LESS THAN WEEKLY																		
MALE	64	5.7	71	86	3.9	107	66	5.0	107	85	4.4	107	76	4.3	107	78	5.0	107
FEMALE	60	6.5	72	87	4.0	102	51	5.7	102	81	5.0	102	65	5.4	102	72	5.7	102
NEVER																		
MALE	58	3.5	232	79	2.7	307	61	3.2	307	80	2.9	307	69	3.0	307	73	3.3	307
FEMALE	55	3.6	257	78	2.6	353	50	3.1	353	81	2.7	353	65	2.9	353	70	3.2	353
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	47	4.5	148	77	3.5	210	53	4.1	210	78	3.7	210	62	3.9	210	68	4.2	210
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
PUBLIC	59	3.4	256	80	2.5	346	55	3.0	346	81	2.7	346	67	2.8	346	71	3.1	346
NONPUBLIC	61	8.4	34	78	8.5	38	54	9.4	38	85	7.8	38	66	9.7	38	73	9.6	38
LESS THAN WEEKLY																		
PUBLIC	62	4.7	127	86	3.0	187	59	4.0	187	83	3.5	187	70	3.6	187	75	4.0	187
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	55	2.7	440	78	2.0	603	54	2.3	603	80	2.1	603	66	2.2	603	70	2.4	603
NONPUBLIC	66	7.5	49	81	6.6	57	62	7.1	57	85	6.2	57	76	6.8	57	76	7.3	57

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 2.1a: HOW OFTEN DO YOU WORK MATH PROBLEMS AT THE BOARD - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS PROBLEMS AT THE BOARD - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-1 51	-0 36	-0 22	-0.37	-0.80	-0.50
WEEKLY/NEVER	0.914	0.457	0.027	0.313	-0.05	0.188
LT WEEKLY/NEVER	1.156	2.480 *	0.937	0.727	0.998	0.971
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.77 FOR 9 TESTS AT .05)						
DAILY						
WH/BL	1.120	1.256	1.951	1.061	1.443	1.199
WH/HISP		2.264	1.681	0.909	2.501	1.240
BL/HISP		0.869	-0.20	-0.17	0.782	0.021
WEEKLY						
WH/BL	1.903	1.535	4.081 *	1.209	2.656	1.798
WH/HISP	1.399	1.443	1.717	1.302	1.808	1.380
BL/HISP	-0.12	0.148	-1.56	0.182	-0.41	-0.20
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL	2.223	2.161	2.886 *	1.671	3.525 *	2.073
WH/HISP	1.637	1.881	2.342	1.307	2.431	1.711
BL/HISP	-0.48	-0.11	-0.17	-0.19	-0.74	-0.17
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	1.095	0.439	1.121	0.158	0.013	0.490
WEEKLY						
M/F	0 347	0.228	1.349	-0.39	0.419	0.170
LESS THAN WEEKLY						
M/F	0 483	-0.19	1.925	0.511	1.508	0.799
NEVER						
M/F	0 477	0.341	2.422	-0.20	1.175	0.659
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB	-0.15	0.181	0.091	-0.49	0.059	-0.16
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-1.33	-0.44	-1.09	-0.78	-1.35	-0.80

* Statistically significant difference.

TABLE 2.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS AT THE BOARD?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS AT THE BOARD																		
DAILY	36	2.5	512	54	3.5	230	50	2.7	512	50	2.2	509	42	2.8	512	45	2.8	512
WEEKLY	41	2.2	738	59	2.6	379	55	2.3	738	56	1.9	738	46	2.3	738	50	2.4	738
LESS THAN WEEKLY	48	2.9	431	58	3.6	221	56	3.0	431	56	2.5	431	48	3.0	431	52	3.1	431
NEVER	46	2.4	616	61	3.0	310	57	2.5	617	56	2.0	615	49	2.5	617	53	2.6	617
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	43	3.7	265	59	4.8	117	56	3.8	265	55	3.0	263	46	3.9	265	50	4.0	265
BLACK	21	4.7	122	43	7.4	53	35	5.6	122	38	4.6	122	29	5.4	122	32	5.6	122
HISPANIC	26	5.3	105	52	7.4	53	39	5.9	105	42	4.8	104	33	5.9	105	36	6.1	105
WEEKLY																		
WHITE	47	3.1	402	64	3.5	212	60	3.1	402	61	2.5	402	50	3.2	402	55	3.3	402
BLACK	28	4.2	173	47	6.0	83	41	4.8	173	46	3.7	173	35	4.7	173	37	4.8	173
HISPANIC	28	4.8	130	47	6.5	64	43	5.5	130	41	4.5	130	38	5.5	130	39	5.6	130
LESS THAN WEEKLY																		
WHITE	52	3.6	280	61	4.5	144	59	3.7	280	59	3.1	280	51	3.8	280	55	3.9	280
BLACK	30	6.6	76	39	8.4	38	44	7.3	76	42	5.9	76	36	7.2	76	39	7.4	76
HISPANIC	37	8.1		55	9.3	31	44	8.5	58	50	7.5	58	38	8.4	58	43	8.6	58
NEVER																		
WHITE	50	3.1	379	63	3.8	194	61	3.1	380	59	2.5	379	52	3.2	380	56	3.3	380
BLACK	30	5.3	118	56	7.8	56	42	5.9	118	41	4.7	118	36	5.6	118	38	5.9	118
HISPANIC	34	5.9	94	49	7.7	45	47	6.3	94	43	4.9	93	39	6.3	94	42	6.5	94
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY GENDER OF EXAMINEE																		
DAILY																		
MALE	35	3.6	247	56	4.9	107	49	3.9	247	48	3.2	246	42	4.0	247	44	4.0	247
FEMALE	37	3.6	265	53	4.9	123	50	3.8	265	52	3.0	263	42	3.9	265	46	4.0	265
WEEKLY																		
MALE	41	3.0	409	58	3.5	209	55	3.1	409	55	2.5	409	47	3.2	409	50	3.2	409
FEMALE	41	3.3	329	60	4.0	170	54	3.5	329	57	2.8	329	45	3.5	329	50	3.6	329
LESS THAN WEEKLY																		
MALE	44	4.3	197	60	5.3	101	54	4.5	197	58	3.6	197	47	4.4	197	51	4.6	197
FEMALE	52	4.0	234	57	4.9	120	57	4.1	234	55	3.4	234	49	4.2	234	54	4.3	234
NEVER																		
MALE	43	3.3	314	56	4.5	146	54	3.5	315	53	2.8	314	46	3.5	315	49	3.6	315
FEMALE	50	3.4	302	66	4.2	164	60	3.5	302	58	2.7	301	52	3.6	302	56	3.7	302
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	36	2.7	468	55	3.7	204	49	2.9	468	50	2.3	465	41	2.9	468	45	3.0	468
NONPUBLIC	40	9.3	43		-	N<30	57	9.5	43	56	6.9	43	48	9.5	43	51	9.9	43
WEEKLY																		
PUBLIC	40	2.3	668	57	2.7	342	54	2.4	668	54	1.9	668	45	2.5	668	49	2.5	668
NONPUBLIC	46	7.4	70	72	9.0	37	60	7.5	70	64	6.3	70	51	7.9	70	56	7.9	70
LESS THAN WEEKLY																		
PUBLIC	48	3.0	397	57	3.7	205	55	3.1	397	55	2.6	397	47	3.2	397	51	3.3	397
NONPUBLIC	50	10.9	34	-	-	N<30	63	10.9	34	66	7.9	34	57	11.1	34	60	11.2	34
NEVER																		
PUBLIC	46	2.4	591	61	3.1	300	57	2.5	591	56	2.0	590	49	2.6	591	52	2.6	591
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 2.2a: HOW OFTEN DO YOU WORK MATH PROBLEMS AT THE BOARD - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORK PROBLEMS AT THE BOARD - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-2.82 *	-1.53	-2.03	-1.81	-1.89	-1.96
WEEKLY/NEVER	-1.57	-0.52	-0.65	0.037	-0.89	-0.74
LT WEEKLY/NEVER	0 531	-0.63	-0 38	0 220	-0.30	-0.07
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2 86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	3 547 *	1.859	3 066 *	3 029 *	2.555	2.676
WH/HISP	2.536	0.848	2 347	2.172	1.854	2.000
BL/HISP	-0 65	-0 84	-0 50	-0 63	-0 48	-0.46
WEEKLY						
WH/BL	3 654	2.457	3 402	3 246 *	2.552	2.992
WH/HISP	3.308	2.287	2.672	3.846 *	1.927	2.424
BL/HISP	0	-0.02	-0 35	0 927	-0 30	-0.22
LESS THAN WEEKLY						
WH/BL	2.955 *	2.286	1.868	2.648	1.764	1.990
WH/HISP	1 659	0 638	1.580	1.137	1.391	1.297
BL/HISP	-0.72	-1.21	-0.06	-0.88	-0.13	-0.38
NEVER						
WH/BL	3.305 *	0.781	2.710	3.542 *	2.584	2 633
WH/HISP	2.430	1.670	1.969	3.076 *	1.927	1.898
BL/HISP	-0.50	0.691	-0.48	-0.28	-0.36	-0.44
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	-0.47	0.434	-0 18	-0.96	0 054	-0.26
WEEKLY						
M/F	0 157	-0.31	0 302	-0.58	0.296	0.145
LESS THAN WEEKLY						
M/F	-1 43	0.440	-0 38	0.479	-0.37	-0 43
NEVER						
M/F	-1 49	-1.72	-1 17	-1 32	-1.12	-1.18
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
PUB/NPUB	-0 35		-0.77	-0.75	-0.70	-0.57
WEEKLY						
PUB/NPUB	-0.72	-1.59	-0 78	-1.50	-0.69	-0.78
LT WEEKLY						
PUB/NPUB	-0 15		-0 75	-1 23	-0	-0.73
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 2.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS AT THE BOARD?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS AT THE BOARD																		
DAILY	25	2.8	375	44	4.1	173	30	3.1	375	30	2.1	375	39	3.0	375	32	3.2	375
WEEKLY	29	1.7	1026	60	2.4	512	36	1.9	1026	35	1.4	1026	44	1.9	1026	38	2.0	1026
LESS THAN WEEKLY	31	3.5	259	50	4.7	114	37	3.8	259	36	2.5	259	46	3.5	259	39	3.9	259
NEVER	28	2.2	595	55	2.9	324	35	2.5	595	33	1.9	595	44	2.4	595	37	2.6	595
NOT REPORTED	12	4.1	89	31	7.5	42	13	4.3	89	19	4.0	89	18	4.4	89	15	4.7	89
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	28	4.0	198	49	6.2	82	32	4.3	198	32	2.8	198	42	4.2	198	35	4.5	198
BLACK	19	5.0	99	36	8.7	53	25	5.6	99	24	4.4	99	35	5.8	99	27	5.9	99
HISPANIC	23	6.9	61	39	10.0	31	23	7.2	61	27	5.6	61	33	7.4	61	27	7.6	61
WEEKLY																		
WHITE	31	2.2	651	65	2.9	346	38	2.5	651	37	1.8	651	49	2.4	651	41	2.5	651
BLACK	20	3.8	169	45	6.0	83	26	4.4	169	25	3.3	169	37	4.5	169	28	4.6	169
HISPANIC	23	4.1	160	36	6.6	66	29	4.6	160	29	3.2	160	38	4.7	160	30	4.8	160
LESS THAN WEEKLY																		
WHITE	34	4.5	164	54	6.0	72	40	4.9	164	38	3.1	164	50	4.4	164	42	5.0	164
BLACK	21	7.1	50	-	-	N<30	27	8.0	50	23	5.2	50	36	7.8	50	28	8.4	50
HISPANIC	25	8.7	40	-	-	N<30	30	9.6	40	34	7.9	40	35	9.2	40	30	9.6	40
NEVER																		
WHITE	32	2.9	383	61	3.6	206	37	3.2	383	34	2.4	383	46	3.0	383	40	3.2	383
BLACK	18	4.6	107	34	6.9	57	28	5.6	107	25	4.2	107	41	5.9	107	29	5.8	107
HISPANIC	18	5.1	86	48	6.9	51	27	6.2	86	32	5.4	86	37	6.0	86	30	6.4	86
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY GENDER OF EXAMINEE																		
DAILY																		
MALE	27	4.1	187	43	5.7	84	31	4.4	187	33	3.0	187	38	4.3	187	33	4.5	187
FEMALE	22	3.9	188	45	6.0	89	29	4.3	188	27	3.0	188	40	4.2	188	31	4.5	188
WEEKLY																		
MALE	30	2.4	515	62	3.3	246	37	2.7	515	33	1.9	515	46	2.7	515	39	2.8	515
FEMALE	27	2.4	511	59	3.4	266	34	2.7	511	36	2.1	511	46	2.6	511	38	2.8	511
LESS THAN WEEKLY																		
MALE	32	4.5	148	51	6.1	69	36	5.0	148	34	3.4	148	47	4.7	148	39	5.1	148
FEMALE	30	5.4	111	49	7.5	45	38	5.9	111	38	3.9	111	45	5.2	111	39	6.0	111
NEVER																		
MALE	29	3.3	299	57	4.1	167	35	3.6	299	34	2.7	299	43	3.4	299	37	3.6	299
FEMALE	26	3.1	296	53	4.1	157	34	3.5	296	32	2.7	296	44	3.4	296	36	3.6	296
HOW OFTEN WORK MATH PROBLEMS AT BOARD BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	25	3.0	336	44	4.3	155	29	3.2	336	31	2.3	336	39	3.2	336	32	3.3	336
NONPUBLIC	25	9.1	39	-	-	N<30	33	10.0	39	24	6.5	39	42	9.2	39	33	10.1	39
WEEKLY																		
PUBLIC	29	1.8	935	59	2.5	463	36	2.0	935	34	1.5	935	45	2.0	935	38	2.1	935
NONPUBLIC	28	5.8	91	67	6.7	49	36	6.5	91	39	4.8	91	52	6.2	91	41	6.6	91
LESS THAN WEEKLY																		
PUBLIC	31	3.6	240	51	4.9	105	37	4.0	240	34	2.6	240	47	3.7	240	39	4.1	240
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	28	2.3	544	55	3.0	297	34	2.6	544	33	2.0	544	43	2.5	544	36	2.7	544
NONPUBLIC	29	8.1	50	-	-	N<30	38	8.8	50	31	6.4	50	48	8.7	50	39	9.1	50

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 2.3a: HOW OFTEN DO YOU WORK MATH PROBLEMS AT THE BOARD - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FRDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORK PROBLEMS AT THE BOARD - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-0.80	-2.12	-1.21	-0.91	-1.19	-1.10
WEEKLY/NEVER	0.212	1.477	0.284	0.765	0.787	0.464
LT WEEKLY/NEVER	0.749	-0.90	0 544	0.851	0.567	0.428
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	1.307	1.433	1.065	1.525	1.052	1.041
WH/HISP	0.510	0.816	1.142	0.746	1.043	0.862
BL/HISP	-0.50	-0.29	0.230	-0.46	0.148	-0.01
WEEKLY						
WH/BL	2.524	2.932 *	2.436	3.235 *	2.385	2.404
WH/HISP	1.703	3.966 *	1.739	2.269	2.058	1.938
BL/HISP	-0.55	1.014	-0.50	-0.83	-0.21	-0.31
LESS THAN WEEKLY						
WH/BL	1.532		1.421	2.462	1.602	1.400
WH/HISP	0.972		0.915	0.448	1.854	1.116
BL/HISP	-0.29		-0.27	-1.17	0.374	-0.12
NEVER						
WH/BL	2.608	3.421 *	1.454	1.895	0.736	1.617
WH/HISP	2.377	1.699	1.419	0.356	1.238	1.397
BL/HISP	-0.05	-1.37	0.059	-1.02	0.402	-0.09
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
M/F	0.865	-0.20	0.327	1.480	-0.26	0.362
WEEKLY						
M/F	0.933	0 657	0.622	-1.28	0.080	0.279
LESS THAN WEEKLY						
M/F	0.227	0 216	-0 21	-0.87	0.371	0
NEVER						
M/F	0.666	0.800	0.099	0 741	-0.12	0.175
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
P' "PUB	-0.04		-0 33	1.090	-0.31	-0.12
WEEKLY						
PUB/NPUB	0.066	-1.01	-0.07	-0.96	-1.03	-0.47
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-0 14		-0.35	0.297	-0.53	-0.27

* Statistically significant difference.

TABLE 3.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU USE A MATHEMATICS TEXTBOOK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN USE A MATH TEXTBOOK																		
DAILY	57	1.9	841	81	1.4	1174	57	1.7	1174	82	1.5	1174	68	1.6	1174	72	1.7	1174
WEEKLY	57	3.9	203	77	3.0	256	53	3.6	256	79	3.2	256	66	3.4	256	70	3.7	256
LESS THAN WEEKLY	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER	49	9.0	33	65	7.6	48	39	8.2	48	69	8.2	48	49	7.7	48	57	8.9	48
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	57	1.6	1094	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	71	1.5	1505
HOW OFTEN USE A MATH TEXTBOOK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	61	2.2	600	84	1.5	840	61	2.0	840	84	1.7	840	71	1.8	840	75	1.9	840
BLACK	43	5.0	125	70	4.2	170	37	4.4	170	72	4.5	170	50	4.5	170	59	5.0	170
HISPANIC	47	5.7	90	68	5.2	120	42	5.4	120	74	5.2	120	52	5.1	120	61	5.8	120
WEEKLY																		
WHITE	62	4.6	140	80	3.5	177	56	4.3	177	81	3.7	177	70	3.9	177	72	4.3	177
BLACK	40	9.9	31	70	8.4	39	33	8.9	39	73	9.3	39	45	9.5	39	58	10.4	39
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	-	-	N<30	67	9.5	30	47	10.6	30	72	9.7	30	55	9.3	30	61	10.7	30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HOW OFTEN USE A MATH TEXTBOOK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	59	2.6	410	82	1.9	569	62	2.3	569	82	2.1	569	69	2.2	569	74	2.4	569
FEMALE	56	2.7	431	80	1.9	605	51	2.3	605	81	2.1	605	66	2.2	605	70	2.4	605
WEEKLY																		
MALE	58	5.4	104	77	4.2	131	58	4.9	131	77	4.4	131	70	4.6	131	70	5.0	131
FEMALE	57	5.7	99	78	4.3	125	49	5.1	125	81	4.5	125	62	4.9	125	69	5.4	125
LESS THAN WEEKLY																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HOW OFTEN USE A MATH TEXTBOOK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	56	2.0	751	81	1.4	1060	56	1.7	1060	81	1.5	1060	67	1.6	1060	72	1.8	1060
NONPUBLIC	65	5.3	90	82	4.5	114	63	5.2	114	85	4.5	114	73	5.2	114	76	5.3	114
WEEKLY																		
PUBLIC	57	4.1	183	78	3.1	232	54	3.7	232	79	3.3	232	65	3.5	232	70	3.8	232
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
PUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	48	9.2	31	64	7.8	46	39	8.4	46	68	8.5	46	48	7.8	46	56	9.1	46
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 3.1a: HOW OFTEN DO YOU USE A MATH TEXTBOOK - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL MET `S	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE MATH TEXTBOOK COMPARISONS (Z=2.24 FOR 2 TESTS AT .05)						
DAILY/NEVER	0.855	2.101	2.128	1.483	2.354 *	1.675
WEEKLY/NEVER	0.821	1.558	1.618	1.111	1.987	1.296
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
WH/BL	3.126 *	3.109 *	4.975 *	2.460	4.370 *	3.025
WH/HISP	2.219	2.854 *	3.232 *	1.733	3.593 *	2.303
BL/HISP	-0.48	0.241	-0.74	-0.35	-0.23	-0.26
WEEKLY						
WH/BL	2.012	1.075	2.382	0.812	2.413	1.297
WH/HISP						
BL/HISP						
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
M/F	0.828	0.731	3.392 *	0.411	1.090	1.127
WEEKLY						
M/F	0.203	-0.19	1.247	-0.53	1.201	0.231
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
DAILY						
PUB/NPUB	-1.63	-0 35	-1 28	-0.71	-1.10	-0.79
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 3.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU USE A MATHEMATICS TEXTBOOK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN USE A MATH TEXTBOOK																		
DAILY	44	1.4	1722	60	1.8	852	56	1.5	1722	57	1.2	1718	47	1.5	1722	52	1.6	1722
WEEKLY	40	2.9	419	57	3.7	206	51	3.0	419	50	2.4	419	44	3.1	419	47	3.1	419
LESS THAN WEEKLY	37	7.2	64	56	9.3	33	46	7.8	64	42	6.4	64	39	7.8	64	41	8.0	64
NEVER	28	5.6	97	42	7.8	52	39	5.9	98	33	4.8	97	38	6.2	98	37	6.1	98
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN USE A MATH TEXTBOOK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	49	1.9	1052	64	2.3	522	61	1.9	1052	61	1.5	1050	51	2.0	1052	56	2.0	1052
BLACK	29	3.0	342	46	4.1	166	41	3.4	342	46	2.8	342	34	3.3	342	37	3.5	342
HISPANIC	31	3.5	261	53	4.5	132	45	3.9	261	46	3.2	259	37	3.9	261	41	4.0	261
WEEKLY																		
WHITE	47	4.1	214	58	4.8	111	56	4.3	214	55	3.4	214	49	4.4	214	52	4.5	214
BLACK	25	5.3	107	55	8.5	48	40	6.0	107	36	4.7	107	34	5.8	107	36	6.1	107
HISPANIC	31	6.2	82	50	8.7	38	42	6.5	82	42	5.6	82	37	6.9	82	39	6.9	82
LESS THAN WEEKLY																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	32	9.1	38	-	-	N<30	39	9.1	39	31	7.8	38	40	9.7	39	39	9.6	39
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	19	9.1	30	-	-	N<30	34	10.4	30	29	8.7	30	31	11.0	30	30	11.0	30
HOW OFTEN USE A MATH TEXTBOOK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	42	2.0	881	58	2.5	423	55	2.1	881	56	1.7	880	46	2.1	881	50	2.2	881
FEMALE	46	2.1	841	62	2.5	429	57	2.1	841	59	1.7	838	48	2.2	841	53	2.2	841
WEEKLY																		
MALE	39	4.0	208	54	5.1	101	49	4.3	208	48	3.5	208	43	4.4	208	46	4.4	208
FEMALE	42	4.1	211	59	5.4	105	53	4.3	211	51	3.4	211	45	4.4	211	49	4.5	211
LESS THAN WEEKLY																		
MALE	43	11.4	30	-	-	N<30	48	11.7	30	45	9.2	30	40	11.8	30	45	11.9	30
FEMALE	32	9.3	34	-	-	N<30	45	10.5	34	40	8.9	34	38	10.5	34	39	10.7	34
NEVER																		
MALE	23	7.4	51	-	-	N<30	39	7.8	52	32	6.2	51	38	8.4	52	37	0.2	52
FEMALE	34	8.5	46	-	-	N<30	38	9.0	46	35	7.5	46	38	9.0	46	38	9.2	46
HOW OFTEN USE A MATH TEXTBOOK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	44	1.5	1574	59	1.9	774	56	1.6	1574	57	1.3	1570	47	1.6	1574	51	1.6	1574
NONPUBLIC	44	5.1	147	65	6.3	77	59	5.1	147	63	4.1	147	50	5.3	147	54	5.4	147
WEEKLY																		
PUBLIC	39	2.9	398	56	3.8	198	50	3.1	398	50	2.5	398	43	3.2	398	46	3.2	398
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
PUBLIC	37	7.3	63	56	9.3	32	46	7.9	63	41	6.4	63	38	7.9	63	41	8.0	63
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	26	5.6	94	39	7.9	50	34	6.1	94	30	5.0	94	34	6.4	94	33	6.3	94
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 3 2a: HOW OFTEN DO YOU USE A MATH TEXTBOOK - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

USE MATH TEXTBOOK	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	2.768 *	2 239	2 888 *	4.789 *	1.496	2.284
WEEKLY/NEVER	1 941	1.691	1.895	2.986 *	0.943	1.469
LT WEEKLY/NEVER	0.949	1.148	0 775	1.049	0.090	0.428
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.67 FOR 7 TESTS AT .05)						
DAILY						
WH/BL	5.692 *	3 842 *	5 106 *	4.717 *	4.332 *	4.639
WH/HISP	4.376 *	2.116	3 635 *	4.273 *	3.141 *	3.308
BL/HISP	-0.60	-1.22	-0 78	0.070	-0.62	-0.71
WEEKLY						
WH/BL	3 251 *	0.276	2.148	3.297 *	1.962	2.093
WH/HISP	2.185	0 795	1.795	1.987	1.412	1 543
BL/HISP	-0.67	0 427	-0.21	-0.82	-0.31	0.33
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP	1 035		0 405	0.223	0.652	0.636
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	-1.49	-0 92	-0 46	-1 07	-0 59	-0.76
WEEKLY						
M/F	-0 57	-0 59	-0 77	-0.74	-0.27	-0.52
LESS THAN WEEKLY						
M/F	0 767		0 197	0.376	0.152	0 343
NEVER						
M/F	-1 02		0 025	-0.32	0.040	-0.06
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
DAILY						
PUB/NPUB	-0 01	-0 80	-0.67	-1 43	-0.54	-0.51
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference

TABLE 4.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU DO MATHEMATICS HOMEWORK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU DO MATH HOMEWORK																		
DAILY	59	2.0	751	67	1.6	629	58	1.8	1024	76	1.8	751	56	1.9	1024	60	1.9	1024
WEEKLY	54	2.8	369	63	2.4	308	54	2.7	490	69	2.5	369	52	2.8	490	56	2.8	490
LESS THAN WEEKLY	56	6.0	79	60	5.3	70	52	5.6	110	60	6.1	79	48	5.8	110	52	5.9	110
NEVER	45	6.3	75	50	4.9	62	50	6.2	99	59	5.9	75	45	6.1	99	50	6.3	99
NOT REPORTED	34	8.7	30	-	-	N<30	26	8.4	32	48	8.0	30	29	8.8	32	35	9.5	32
TOTAL W/IN SUBSCALE	56	1.5	1304	64	1.2	1098	56	1.4	1755	72	1.4	1304	53	1.5	1755	57	1.5	1755
HOW OFTEN DO YOU DO MATH HOMEWORK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	62	2.4	519	69	1.9	433	62	2.2	703	78	2.2	519	59	2.3	703	63	2.3	703
BLACK	49	5.1	119	62	4.1	102	40	4.7	166	71	4.7	119	41	4.8	166	45	4.9	166
HISPANIC	45	6.3	80	52	5.3	66	50	5.4	114	71	5.6	80	48	5.8	114	52	5.8	114
WEEKLY																		
WHITE	56	3.3	264	64	2.7	228	59	3.2	343	73	2.9	264	55	3.4	343	59	3.4	343
BLACK	42	8.2	54	52	6.9	42	36	6.7	82	56	7.5	54	37	6.8	82	41	7.1	82
HISPANIC	52	8.4	43	65	8.6	31	40	8.1	54	57	8.7	43	43	8.6	54	45	8.9	54
LESS THAN WEEKLY																		
WHITE	59	6.9	58	63	6.2	51	56	6.7	78	62	7.0	58	53	6.9	78	56	7.1	78
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	52	7.9	48	56	5.4	41	56	7.3	70	65	7.1	48	50	7.3	70	55	7.5	70
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HOW OFTEN DO YOU DO MATH HOMEWORK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	61	2.9	355	70	2.2	298	61	2.6	478	78	2.6	355	58	2.8	478	62	2.8	478
FEMALE	57	2.8	396	64	2.3	331	56	2.5	546	75	2.5	396	53	2.7	546	58	2.7	546
WEEKLY																		
MALE	57	3.6	223	62	2.9	187	59	3.4	299	69	3.2	223	55	3.6	299	58	3.6	299
FEMALE	49	4.6	146	64	4.1	121	47	4.4	191	70	4.3	146	46	4.6	191	50	4.7	191
LESS THAN WEEKLY																		
MALE	63	8.0	44	62	7.2	42	59	7.6	58	63	7.7	44	55	7.7	58	58	8.0	58
FEMALE	46	9.0	35	-	-	N<30	43	8.4	52	56	9.7	35	40	8.8	52	45	8.9	52
NEVER																		
MALE	45	8.9	43	51	6.1	36	50	8.0	59	54	7.5	43	47	8.0	59	49	8.2	59
FEMALE	46	8.9	32	-	-	N<30	50	9.6	40	65	9.5	32	43	9.2	40	50	9.7	40
HOW OFTEN DO YOU DO MATH HOMEWORK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	59	2.1	669	67	1.7	559	58	1.9	909	76	1.9	669	55	2.0	909	60	2.1	909
NONPUBLIC	63	6.2	82	65	5.1	70	59	5.4	115	80	5.1	82	59	5.7	115	62	5.7	115
WEEKLY																		
PUBLIC	54	2.9	348	62	2.5	291	53	2.8	458	69	2.6	348	51	2.9	458	55	3.0	458
NONPUBLIC	-	-	N<30	-	-	N<30	64	10.3	32	-	-	N<30	58	11.3	32	63	10.9	32
LESS THAN WEEKLY																		
PUBLIC	55	6.2	72	57	5.7	64	52	5.9	101	59	6.3	72	48	6.1	101	52	6.2	101
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	46	6.5	70	50	5.2	58	49	6.4	92	58	6.1	70	45	6.3	92	49	6.5	92
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 4.1a: HOW OFTEN DO MATH HOMEWORK - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS (Z=2.4 FOR 3 TESTS AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE~ MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
HOW OFTEN DO MATH HOMEWORK COMPARISONS						
DAILY/NEVER	2.092	3.382 *	1.211	2.849 *	1.S19	1.551
WEEKLY/NEVER	1.269	2.418 *	0.608	1.639	0.912	0.826
LT WEEKLY/NEVER	1.203	1.404	0.227	0.164	0.358	0.265
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	2.446	1.545	4.340 *	1.344	3.359 *	3.282
WH/HISP	2.580	3.171 *	2.021	1.155	1.656	1.795
BL/HISP	0.468	1.604	-1.48	-0.01	-1.00	-0.88
WEEKLY						
WH/BL	1.590	1.663	3.184 *	2.121	2.328	2.321
WH/HISP	0.431	-0.04	2.271	1.792	1.298	1.444
BL/HISP	-0.86	-1.15	-0.37	-0.06	-0.51	-0.40
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
OAILY						
M/F	1 123		1.418	0.663	1.245	1.008
WEEKLY						
M/F	1.269	-0 45	2.176	-0.11	1.596	1.354
LESS THAN WEEKLY						
M/F	1.415		1.395	0.572	1.257	1.052
NEVER						
M/F	-0.04		0.031	-0.91	0.285	-0.07
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
OAILY						
PUB/NPUB	-0.75	0.394	-0.13	-0.75	-0.61	-0.41
WEEKLY						
PUB/NPUB			-0.98		-0.65	-0.69
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 4.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU DO MATHEMATICS HOMEWORK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU DO MATH HOMEWORK																		
DAILY	44	1.5	1569	59	1.9	771	56	1.6	1569	56	1.2	1567	47	1.6	1569	51	1.6	1569
WEEKLY	42	2.5	567	60	3.0	298	54	2.6	568	54	2.2	565	46	2.6	568	50	2.7	568
LESS THAN WEEKLY	33	6.1	83	56	9.1	36	51	6.8	83	51	5.4	83	44	6.9	83	46	7.1	83
NEVER	27	6.0	80	36	8.5	37	34	6.7	80	35	5.7	80	30	6.7	80	32	6.9	80
NOT REPORTED	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN DO YOU DO MATH HOMEWORK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	49	2.0	939	63	2.5	451	60	2.0	939	60	1.6	938	51	2.1	939	55	2.1	939
BLACK	27	3.1	329	43	4.2	165	39	3.4	329	42	2.8	329	34	3.4	329	36	3.5	329
HISPANIC	32	3.8	228	51	4.7	115	45	4.2	228	46	3.4	227	38	4.2	228	41	4.3	228
WEEKLY																		
WHITE	49	3.5	300	63	3.9	176	59	3.6	301	60	3.0	299	51	3.6	301	55	3.7	301
BLACK	29	4.8	135	59	7.3	54	44	5.5	135	47	4.3	135	35	5.3	135	39	5.6	135
HISPANIC	30	5.2	115	51	7.2	58	44	5.7	115	42	4.7	114	37	5.7	115	40	5.9	115
LESS THAN WEEKLY																		
WHITE	37	8.3	47	·	·	N<30	56	9.0	47	59	6.9	47	50	9.5	47	52	9.6	47
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
WHITE	29	8.3	43	·	·	N<30	36	9.2	43	38	7.9	43	31	9.1	43	33	9.4	43
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HOW OFTEN DO YOU DO MATH HOMEWORK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	43	2.1	791	58	2.8	367	55	2.2	791	55	1.7	791	47	2.2	791	50	2.3	791
FEMALE	46	2.2	778	60	2.6	404	57	2.2	778	57	1.8	776	48	2.3	778	52	2.3	778
WEEKLY																		
MALE	41	3.4	284	60	4.0	156	54	3.7	285	53	3.2	283	45	3.7	285	49	3.8	285
FEMALE	44	3.6	283	60	4.7	142	54	3.7	283	56	3.0	282	47	3.7	283	50	3.9	283
LESS THAN WEEKLY																		
MALE	30	8.3	46	·	·	N<30	49	9.4	46	55	7.2	46	42	9.5	46	45	9.8	46
FEMALE	35	8.8	37	·	·	N<30	52	9.9	37	47	7.9	37	47	10.2	37	48	10.3	37
NEVER																		
MALE	28	7.8	47	·	·	N<30	35	8.8	47	39	7.4	47	30	8.8	47	32	9.0	47
FEMALE	26	9.3	33	·	·	N<30	33	10.2	33	27	8.9	33	31	10.4	33	31	10.7	33
HOW OFTEN DO YOU DO MATH HOMEWORK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	44	1.6	1433	58	2.0	700	55	1.6	1433	55	1.3	1431	47	1.7	1433	51	1.7	1433
NONPUBLIC	46	5.3	135	66	6.7	70	61	5.3	135	64	4.1	135	51	5.5	135	56	5.6	135
WEEKLY																		
PUBLIC	42	2.6	535	60	3.1	281	54	2.7	535	55	2.2	533	45	2.7	535	50	2.8	535
NONPUBLIC	43	10.6	32	·	·	N<30	54	10.9	33	53	9.3	32	53	10.4	33	54	10.9	33
LESS THAN WEEKLY																		
PUBLIC	30	6.2	80	56	9.1	36	49	7.0	80	53	5.6	80	42	7.1	80	45	7.3	80
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
PUBLIC	26	6.0	78	36	8.6	36	34	6.7	78	35	5.7	78	29	6.8	78	31	6.9	78
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 4.2a: HOW OFTEN DO MATH HOMEWORK - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS (Z=2.4 FOR 3 TESTS AT .05)

	FNDMNTL METHODS	DRGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
HOW OFTEN DO YOU DO MATH HOMEWORK - COMPARISONS						
DAILY/NEVER	2 841 *	2.640 *	3.119 *	3.604 *	2.467 *	2.712
WEEKLY/NEVER	2.411 *	2.648 *	2.731 *	3.201 *	2.166	2.405
LT WEEKLY/NEVER	0.670	1.582	1.699	2.099	1.419	1.434
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	6.071 *	4.085 *	5.285 *	5.585 *	4.205 *	4.742
WH/HISP	3.906 *	2.332	3.424 *	3.510 *	2.688 *	2.976
BL/HISP	-1.08	-1.19	-0.96	-1.05	-0.78	-0.94
WEEKLY						
WH/BL	3.351 *	0.434	2.309	2.407	2.357	2.352
WH/HISP	3 090 *	1.440	2.271	3.189 *	2.056	2.209
BL/HISP	-0.11	0.796	0.012	0.830	-0.15	-0.04
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	-1.16	-0.73	-0.54	-1.12	-0.24	-0.64
WEEKLY						
M/F	-0 74	-0 09	-0.03	-0.57	-0.30	-0.16
LESS THAN WEEKLY						
M/F	-0.41		-0.17	0.688	-0.39	-0.27
NEVER						
M/F	0.148		0.207	1.051	-0.06	0.093
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB	-0.26	-1.00	-1 12	-2.02	-0.69	-0.85
WEEKLY						
PUB/NPUB	-0.10		-0.00	0 220	-0.73	-0.41
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 4.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU DO MATHEMATICS HOMEWORK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU DO MATH HOMEWORK																		
DAILY	24	2.3	518	48	3.5	254	30	2.6	518	31	1.9	518	41	2.6	518	33	2.7	518
WEEKLY	29	1.7	1005	58	2.3	504	36	1.9	1005	35	1.4	1005	46	1.9	1005	38	2.0	1005
LESS THAN WEEKLY	29	3.5	248	50	4.7	133	34	3.8	248	32	2.8	248	40	3.7	248	35	3.9	248
NEVER	30	2.5	491	58	3.4	238	37	2.8	491	35	2.0	491	46	2.6	491	39	2.8	491
.NOT REPORTED	11	4.0	82	28	7.8	36	10	4.3	82	16	3.8	82	16	4.2	82	13	4.6	82
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
HOW OFTEN DO YOU DO MATH HOMEWORK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	26	3.4	259	53	4.8	136	33	3.8	259	33	2.8	259	43	3.6	259	35	3.9	259
BLACK	19	4.0	144	40	6.5	69	26	4.8	144	22	3.6	144	39	5.1	144	29	5.0	144
HISPANIC	21	5.2	93	38	8.6	39	26	5.9	93	28	4.3	93	35	5.8	93	29	6.1	93
WEEKLY																		
WHITE	31	2.2	639	63	2.9	318	38	2.5	639	36	1.7	639	49	2.4	639	41	2.5	639
BLACK	19	3.7	181	43	5.5	90	26	4.2	181	25	3.2	181	37	4.3	181	28	4.4	181
HISPANIC	23	4.5	146	42	6.1	79	30	5.0	146	34	3.9	146	40	5.0	146	32	5.2	146
LESS THAN WEEKLY																		
WHITE	32	4.7	150	59	6.2	78	37	5.0	150	33	3.6	150	44	4.8	150	39	5.2	150
BLACK	19	7.6	45	·	·	N<30	24	8.4	45	27	6.7	45	29	8.2	45	26	8.8	45
HISPANIC	22	7.4	47	·	·	N<30	25	8.1	47	30	7.1	47	28	7.5	47	25	8.2	47
NEVER																		
WHITE	33	3.1	344	62	4.1	173	39	3.4	344	38	2.5	344	49	3.2	344	42	3.5	344
BLACK	20	6.5	61	·	·	N<30	29	7.6	61	28	4.9	61	37	7.3	61	29	7.7	61
HISPANIC	20	6.1	64	·	·	N<30	27	7.2	64	26	5.3	64	38	7.4	64	29	7.5	64
HOW OFTEN DO YOU DO MATH HOMEWORK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	26	3.4	255	47	4.7	126	32	3.7	255	32	2.8	255	41	3.7	255	34	3.8	255
FEMALE	22	3.1	263	49	5.1	128	29	3.6	263	29	2.7	263	41	3.6	263	32	3.8	263
WEEKLY																		
MALE	31	2.5	504	60	3.2	240	36	2.7	504	34	1.9	504	47	2.7	504	39	2.8	504
FEMALE	27	2.4	501	57	3.3	264	35	2.8	501	35	2.0	501	45	2.6	501	38	2.8	501
LESS THAN WEEKLY																		
MALE	30	4.7	132	53	6.1	75	35	5.2	132	34	4.0	132	40	5.0	132	36	5.3	132
FEMALE	27	5.3	116	47	7.3	58	32	5.6	116	29	4.1	116	40	5.4	116	33	5.8	116
NEVER																		
MALE	31	3.6	264	60	4.7	130	37	3.9	264	33	2.7	264	44	3.6	264	38	3.9	264
FEMALE	29	3.6	227	56	5.0	108	36	4.1	227	33	3.0	227	47	3.8	227	39	4.1	227
HOW OFTEN DO YOU DO MATH HOMEWORK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	23	2.4	458	46	3.8	220	30	2.7	458	30	2.0	458	41	2.7	458	32	2.9	458
NONPUBLIC	25	7.1	60	56	8.4	34	33	8.1	60	37	5.9	60	44	7.7	60	36	8.2	60
WEEKLY																		
PUBLIC	29	1.8	915	58	2.4	457	36	2.0	915	35	1.5	915	45	2.0	915	38	2.1	915
NONPUBLIC	28	5.9	88	63	7.6	47	37	6.6	88	34	4.8	88	52	6.3	88	40	6.8	88
LESS THAN WEEKLY																		
PUBLIC	28	3.7	226	53	4.9	123	33	4.0	226	32	3.0	226	41	3.8	226	35	4.1	226
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
PUBLIC	30	2.6	460	58	3.5	223	37	2.9	460	35	2.1	460	45	2.7	460	38	2.9	460
NONPUBLIC	31	10.4	31	·	·	N<30	38	10.8	31	43	8.0	31	60	10.1	31	43	11.3	31

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS · 1985-86 MATHEMATICS ASSESSMENT

TABLE 4.3a: HOW OFTEN DO MATH HOMEWORK - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS (Z=2.4 FOR 3 TESTS AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
HOW OFTEN DO YOU DO MATH HOMEWORK - COMPARISONS						
DAILY/NEVER	-1.86	-2.05	-1.69	-1.75	-1 24	-1.50
WEEKLY/NEVER	-0.42	0.121	-0.35	-0 32	0 123	-0 11
LT WEEKLY/NEVER	-0.34	-1 33	-0.67	-1.06	-1.24	-0.76
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=' 86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	1.427	1.609	1.086	2 271	0.621	1.023
WH/HISP	0.850	1.481	0 911	0.972	1.164	0 925
BL/HISP	-0.33	0.139	-0 02	-0 94	0.527	0.025
WEEKLY						
WH/BL	2.826	3.276 *	2 57[illegible]	3 114 *	2.289 *	2.567
WH/HISP	1.657	3.199 *	1.4[illegible]9	0.446	1 602	1 495
BL/HISP	-0.65	0.145	-0 67	-1.87	-0.36	-0.64
LESS THAN WEEKLY						
WH/BL	1.452		1.320	0.871	1.596	1.250
WH/HISP	1.086		1.238	0.466	1.841	1 355
BL/HISP	-0.32		-0.09	-0.29	0.116	0.033
NEVER						
WH/BL	1.780		1 207	1 756	1 447	1.499
WH/HISP	1.860		1.579	1.963	1.315	1.495
BL/HISP	0		0 238	0.251	-0.08	-0.02
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2 5 FOR 4 TESTS AT 05)						
DAILY						
M/F	0.778	-0 23	0 479	0 884	-0.11	0 277
WEEKLY						
M/F	1 062	0.522	0 051	-0 17	0.424	0.301
LESS THAN WEEKLY						
M/F	0.451	0.652	0.469	0 777	-0.02	0 357
NEVER						
M/F	0.393	0.542	0 159	-1.10	-0 55	-0.10
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2 4 FOR 3 TESTS AT 05)						
DAILY						
PUB/NPUB	-0.22	-1 02	-0 44	-1 13	-0.35	-0 48
WEEKLY						
PUB/NPUB	0.129	-0 70	-0 21	0 039	-0 94	-0.32
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-0 08		-0 13	-0 91	-1 47	-0 43

* Statistically significant difference.

TABLE 5.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS ALONE?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS ALONE																		
DAILY	57	1.9	793	81	1.4	1116	56	1.7	1116	82	1.5	1116	68	1.6	1116	72	1.7	1116
WEEKLY	59	3.4	250	80	2.6	309	56	3.3	309	80	2.9	309	67	3.0	309	71	3.3	309
LESS THAN WEEKLY	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER	43	9.9	33	58	7.8	52	38	8.2	52	68	8.0	52	50	7.9	52	56	8.8	52
NOT REPORTED	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
TOTAL W/IN SUBSCALE	57	1.6	1094	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	7[illegible]	1.5	1505
HOW OFTEN WORK MATH PROBLEMS ALONE BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	61	2.3	566	83	1.6	803	61	2.0	803	84	1.7	803	71	1.8	803	75	2.0	803
BLACK	43	5.2	116	70	4.3	160	36	4.5	160	73	4.6	160	51	4.6	160	59	5.1	160
HISPANIC	45	6.2	82	70	5.2	111	43	5.4	111	75	5.3	111	52	5.4	111	62	6.0	111
WEEKLY																		
WHITE	62	4.0	168	82	3.1	210	58	4.1	210	82	[illegible].4	210	71	3.6	210	73	4.0	210
BLACK	42	8.5	42	67	7.6	49	36	7.7	49	70	8.5	49	45	8.5	49	56	9.2	49
HISPANIC	57	10.5	31	71	9.2	37	48	10.0	37	74	9.1	37	61	9.2	37	64	10.3	37
LESS THAN WEEKLY																		
WHITE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30		·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
WHITE	·	·	N<30	61	9.3	34	43	10.5	34	69	9.6	34	55	9.3	34	58	10.7	34
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HOW OFTEN WORK MATH PROBLEMS ALONE BY GENDER OF EXAMINEE																		
DAILY																		
MALE	60	2.8	[illegible]71	83	[illegible].0	527	63	2.4	527	82	2.1	52[illegible]	70	2.[illegible]	527	75	2.4	527
FEMALE	55	2.7	[illegible]2	79	2.0	589	51	2.4	589	81	2.1	58[illegible]	65	2.3	589	70	2.4	589
WEEKLY																		
MALE	59	4.[illegible]	[illegible]41	78	3.6	170	60	4.4	170	79	3.9	170	70	4.0	170	72	4.4	170
FEMALE	58	5.3	[illegible]09	81	3.9	139	51	5.0	139	80	4.3	139	63	4.7	139	69	5.1	139
LESS THAN WEEKLY																		
MALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
FEMALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
MALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
FEMALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HOW OFTEN WORK MATH PROBLEMS ALONE BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	56	2.1	721	81	1.5	1023	56	1.8	1023	81	1.6	1023	67	1.7	1023	72	1.8	1023
NONPUBLIC	65	5.9	72	82	5.1	93	64	5.7	93	86	4.8	93	72	5.8	93	77	5.8	93
WEEKLY																		
PUBLIC	58	3.7	212	80	2.8	265	56	3.5	265	79	3.1	265	66	3.3	265	70	3.6	265
NONPUBLIC	63	8.5	38	80	7.5	44	55	8.8	44	82	7.7	44	73	8.0	44	73	8.9	44
LESS THAN WEEKLY																		
PUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
PUBLIC	·	·	N<30	57	8.2	47	38	8.6	47	68	8.4	47	49	8.1	47	56	9.2	47
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 5 1a: HOW OFTEN STUDENT WORKS MATH PROBLEMS ALONE - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS PROBLEMS ALONE - COMPARISONS (Z=2.24 FOR 2 TESTS AT .05)						
DAILY/NEVER	1.461	2.822 *	2.209	1.689	2.231	1.836
WEEKLY/NEVER	1.524	2.523 *	2.070	1.348	2.088	1.571
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	3.238 *	2 902 *	5 003 *	2.229	4.164 *	2.881
WH/HISP	2 453	2.432	3.037	1.647	3.501 *	2.182
BL/HISP	-0 27	-0.01	-1.02	-0.24	-0.11	-0.26
WEEKLY						
WH/BL	2.142	1.832	2.521	1.301	2.828 *	1.697
WH/HISP	0.438	1.195	0.990	0.821	1.034	0.866
BL/HISP	-1.13	-0.28	-0.90	-0.31	-1.27	-0.53
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
M/F	1.258	1 240	3.533 *	0.335	1.476	1.275
WEEKLY						
M/F	0.159	-0 58	1.431	-0 19	1.037	0.447
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB	-1 28	-0.16	-1.37	-0.95	-0.81	-0.80
WEEKLY						
PUB/NPUB	-0.56	-0 07	0.158	-0.32	-0.84	-0.28
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 5.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS ALONE?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS ALONE																		
DAILY	44	1.4	1852	60	1.7	932	56	1.4	1853	57	1.2	1849	48	1.5	1853	52	1.5	1853
WEEKLY	39	3.3	313	52	4.4	144	50	3.5	313	50	2.8	312	41	3.6	313	45	3.6	313
LESS THAN WEEKLY	41	8.3	51	·	·	N<30	47	9.0	51	45	7.5	51	42	9.0	51	45	9.1	51
NEVER	29	5.9	82	44	8.8	38	37	6.7	82	38	5.4	82	37	6.7	82	36	6.8	82
NOT REPORTED	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN WORK MATH PROBLEMS ALONE BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	49	1.8	1104	64	2.2	566	60	1.9	1105	60	1.5	1103	51	1.9	1105	56	2.0	1105
BLACK	28	2.8	391	47	4.0	183	41	3.2	391	44	2.5	391	35	3.1	391	37	3.2	391
HISPANIC	31	3.4	280	51	4.2	142	46	3.7	280	45	3.0	278	38	3.7	280	41	3.8	280
WEEKLY																		
WHITE	44	4.5	169	54	5.6	80	55	4.7	169	53	3.7	168	45	4.9	169	49	4.9	169
BLACK	28	7.1	61	52	11.0	30	39	8.0	61	35	6.4	61	32	7.8	61	35	8.1	61
HISPANIC	30	6.6	70	·	·	N<30	37	7.4	70	42	6.2	70	34	7.4	70	36	7.6	70
LESS THAN WEEKLY																		
WHITE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
WHITE	37	9.6	34	·	·	N<30	41	10.6	34	42	8.9	34	41	10.7	34	41	10.8	34
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HOW OFTEN WORK MATH PROBLEMS ALONE BY GENDER OF EXAMINEE																		
DAILY																		
MALE	42	1.9	928	59	2.4	447	55	2.0	929	55	1.6	928	47	2.1	929	50	2.1	929
FEMALE	46	2.0	924	61	2.4	485	57	2.0	924	58	1.6	921	48	2.1	924	53	2.1	924
WEEKLY																		
MALE	37	4.4	166	52	6.0	76	49	4.7	166	49	4.0	165	41	4.8	166	45	4.9	166
FEMALE	42	4.8	147	53	6.6	68	51	5.1	147	50	4.0	147	42	5.3	147	46	5.3	147
LESS THAN WEEKLY																		
MALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
FEMALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
MALE	32	7.8	44	·	·	N<30	39	9.0	44	35	7.0	44	41	9.1	44	38	9.1	44
FEMALE	27	8.9	38	·	·	N<30	36	10.0	38	40	8.4	38	34	9.8	38	35	10.2	38
HOW OFTEN WORK MATH PROBLEMS ALONE BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	44	1.4	1715	60	1.8	856	56	1.5	1715	56	1.2	1712	47	1.5	1715	51	1.6	1715
NONPUBLIC	45	5.4	136	66	6.4	75	61	5.2	137	63	4.2	136	51	5.4	137	56	5.5	137
WEEKLY																		
PUBLIC	37	3.4	285	51	4.6	133	48	3.6	285	49	3.0	284	40	3.7	285	44	3.8	285
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
LESS THAN WEEKLY																		
PUBLIC	40	8.4	49	·	·	N<30	47	9.1	49	44	7.6	49	41	9.2	49	44	9.3	49
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
NEVER																		
PUBLIC	27	5.9	76	43	9.0	36	36	6.9	76	35	5.7	76	34	6.9	76	34	7.0	76
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 5.2a: HOW OFTEN STUDENT WORKS MATH PROBLEMS ALONE - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS PROBLEMS ALONE - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	2.430 *	1.832	2.731 *	3.383 *	1.504	2.164
WEEKLY/NEVER	1 427	0.883	1.656	1.929	0.541	1.154
LT WEEKLY/NEVER	1 160		0.884	0.811	0.401	0.740
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	6.352 *	3.589 *	5 248 *	5.388 *	4 497 *	4.892
WH/HISP	4 513 *	2.576	3.449 *	4 527 *	3.046 *	3.289
BL/HISP	0 86	-0.70	-1.01	-0.15	-0.74	-0.85
WEEKLY						
WH/BL	1 875	0 145	1.700	2.425	1.457	1 499
WH/HISP	1 756		2 026	1 516	1.215	1 441
BL/HISP	-0 18		0.174	-0.77	-0.24	-0.10
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT 05)						
DAILY						
M/F	-1 36	-0.52	-0.51	-1.03	-0.57	-0 76
WEEKLY						
M/F	-0 79	-0 13	-0 34	-0 07	-0 18	-0 24
LESS THAN WEEKLY						
M/F						
NEVER						
M/F	0 473		0.215	-0.46	0 566	0.263
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1 96 FOR 1 TEST AT .05)						
DAILY						
PUB/NPUB	-0 16	-0 96	-0 97	-1 67	-0 69	-0 80
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 5.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS ALONE?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS ALONE																		
DAILY	29	1.5	1295	55	2.1	638	36	1.7	1295	35	1.2	1295	45	1.6	1295	38	1.8	1295
WEEKLY	29	2.2	637	59	2.9	322	35	2.4	637	34	1.8	637	45	2.3	637	38	2.5	637
LESS THAN WEEKLY	22	5.0	109	41	7.0	55	28	5.7	109	28	4.4	109	33	5.6	109	29	5.9	109
NEVER	24	3.7	212	48	5.1	111	29	3.9	212	27	2.9	212	39	3.9	212	32	4.1	212
NOT REPORTED	13	3.9	91	36	7.1	39	14	4.5	91	18	3.9	91	18	4.2	91	16	4.7	91
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
HOW OFTEN WORK MATH PROBLEMS ALONE BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	31	2.0	841	60	2.7	407	38	2.2	841	37	1.5	841	48	2.0	841	40	2.2	841
BLACK	21	3.4	222	44	4.8	120	28	3.9	222	27	3.1	222	39	4.0	222	30	4.1	222
HISPANIC	23	3.9	189	42	5.4	95	29	4.3	189	31	3.3	189	38	4.4	189	31	4.4	189
WEEKLY																		
WHITE	33	2.9	384	65	3.6	208	39	3.2	384	37	2.4	384	49	3.1	384	42	3.3	384
BLACK	17	4.3	122	33	7.4	54	25	5.0	122	24	3.5	122	37	5.3	122	26	5.3	122
HISPANIC	20	5.0	98	33	7.1	44	28	5.8	98	25	4.1	98	36	5.6	98	28	6.0	98
LESS THAN WEEKLY																		
WHITE	24	8.0	44	-	-	N<30	31	9.2	44	31	7.2	44	33	8.5	44	31	9.4	44
BLACK	19	7.8	39	-	-	N<30	25	9.4	39	23	6.7	39	31	9.7	39	26	9.6	39
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	26	5.0	120	50	6.7	67	32	5.4	120	28	3.9	120	43	5.3	120	34	5.5	120
BLACK	18	7.4	45	-	-	N<30	22	8.0	45	18	5.7	45	35	8.9	45	25	8.7	45
HISPANIC	21	7.9	38	-	-	N<30	26	9.1	38	39	7.8	38	34	8.7	38	29	9.3	38
HOW OFTEN WORK MATH PROBLEMS ALONE BY GENDER OF EXAMINEE																		
DAILY																		
MALE	31	2.2	656	58	2.9	325	37	2.4	656	36	1.7	656	46	2.3	656	39	2.5	656
FEMALE	27	2.2	639	53	3.1	313	34	2.4	639	34	1.8	639	44	2.3	639	36	2.5	639
WEEKLY																		
MALE	31	3.2	312	59	4.2	151	35	3.5	312	33	2.5	312	45	3.4	312	38	3.6	312
FEMALE	28	3.0	325	59	4.0	171	35	3.4	325	35	2.5	325	46	3.2	325	38	3.5	325
LESS THAN WEEKLY																		
MALE	24	6.8	63	45	8.6	30	28	7.5	63	30	5.7	63	38	7.7	63	31	7.9	63
FE	20	7.3	46	-	-	N<30	29	8.8	46	25	7.0	46	27	8.1	46	27	8.9	46
NEVER																		
MALE	23	4.8	120	46	6.6	64	29	5.2	120	25	3.7	120	35	5.2	120	30	5.3	120
FEMALE	25	5.7	92	49	8.1	47	30	6.0	92	29	4.5	92	45	5.9	92	34	6.3	92
HOW OFTEN WORK MATH PROBLEMS ALONE BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	29	1.6	1182	56	2.2	583	35	1.8	1182	35	1.3	1182	45	1.7	1182	38	1.8	1182
NONPUBLIC	29	5.3	111	53	7.0	54	38	6.0	111	38	4.1	111	49	5.7	111	40	6.1	111
WEEKLY																		
PUBLIC	30	2.3	578	58	3.0	289	35	2.6	578	34	1.9	578	45	2.5	578	38	2.6	578
NONPUBLIC	25	7.3	58	65	9.8	33	39	8.4	58	36	6.3	58	49	7.7	58	41	8.5	58
LESS THAN WEEKLY																		
PUBLIC	22	5.1	104	40	7.4	51	29	5.9	104	27	4.4	104	33	5.7	104	29	6.0	104
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	24	3.9	187	48	5.5	98	29	4.2	187	27	3.1	187	38	4.2	187	31	4.4	187
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 5.3a: HOW OFTEN STUDENT WORKS MATH PROBLEMS ALONE - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS PROBLEMS ALONE - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	1.156	1.408	1.472	2.710 *	1.416	1.398
WEEKLY/NEVER	1.146	1.938	1.322	2.148	1.318	1.298
LT WEEKLY/NEVER	-0 27	-0.71	-0.11	0.207	-1.00	-0.33
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.81 FOR 10 TESTS AT .05)						
DAILY						
WH/BL	2.717	3.091 *	2.159	2.850 *	1.945	2.153
WH/HISP	1.868	3.121 *	1 958	1.611	2.117	1.976
BL/HISP	-0.48	0.276	-0.05	-0.84	0.254	-0.03
WEEKLY						
WH/BL	2.940 *	3.891 *	2.415	2.983 *	1.974	2.481
WH/HISP	2.305	4.072 *	1.694	2.383	2.072	1.997
BL/HISP	-0.31	0.029	-0.39	-0.22	0.168	-0.22
LESS THAN WEEKLY						
WH/BL	0.476		0.434	0.852	0.124	0.379
WH/HISP						
BL/HISP						
NEVER						
WH/BL	0 914		1.072	1.486	0.714	0.933
WH/HISP	0.611		0.604	-1.25	0.835	0.461
BL/HISP	-0 23		-0.32	-2.19	0.088	-0.36
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	1.429	1.062	0 901	0.695	0.606	0.798
WEEKLY						
M/F	0.750	0.068	-0.04	-0.55	-0.25	0
LESS THAN WEEKLY						
M/F	0.441		-0.01	0.554	0.954	0.361
NEVER						
M/F	-0 21	-0.31	-0.18	-0.74	-1.30	-0.52
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB	-0.10	0.392	-0 43	-0.69	-0.61	-0.37
WEEKLY						
PUB/NPUB	0.587	-0.66	-0.50	-0 36	-0.51	-0.39
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 6.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS IN SMALL GROUPS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS IN SMALL GROUPS																		
DAILY	55	5.4	80	78	4.6	109	53	5.3	109	77	5.0	109	62	5.3	109	68	5.7	109
WEEKLY	57	3.9	185	78	3.0	252	57	3.5	252	81	3.1	252	67	3.2	252	72	3.6	252
LESS THAN WEEKLY	62	4.7	147	83	3.3	197	60	4.0	197	83	3.4	197	72	3.7	197	75	4.0	197
NEVER	56	2.1	671	80	1.6	927	54	1.9	927	81	1.7	927	66	1.8	927	71	1.9	927
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	57	1.6	1094	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	71	1.5	1505
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	60	6.7	50	83	5.5	67	61	6.9	67	81	6.0	67	69	6.5	67	73	6.9	67
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
WHITE	62	4.7	122	81	3.4	166	62	4.3	166	84	3.6	166	72	3.9	166	75	4.3	166
BLACK	44	10.5	33	68	8.7	44	35	9.0	44	72	8.9	44	49	8.8	44	58	9.9	44
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
WHITE	65	5.4	110	85	3.7	149	63	4.7	149	85	3.8	149	75	4.2	149	77	4.5	149
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	59	2.5	485	82	1.8	670	58	2.2	670	82	1.9	670	70	2.1	670	73	2.2	670
BLACK	42	5.7	93	69	4.8	126	35	5.1	126	72	5.2	126	49	5.3	126	59	5.8	126
HISPANIC	47	6.6	73	72	5.3	99	47	5.8	99	76	5.6	99	56	5.7	99	64	6.3	99
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY GENDER OF EXAMINEE																		
DAILY																		
MALE	55	6.6	46	78	6.1	60	59	7.0	60	78	6.8	60	62	7.3	60	69	7.6	60
FEMALE	55	9.3	34	78	7.0	49	44	8.0	49	76	7.4	49	62	7.8	49	66	8.6	49
WEEKLY																		
MALE	59	5.5	95	77	4.2	129	61	4.9	129	80	4.4	129	66	4.5	129	72	5.0	129
FEMALE	56	5.6	90	79	4.9	123	54	5.1	123	82	4.4	123	68	4.7	123	72	5.1	123
LESS THAN WEEKLY																		
MALE	66	6.0	82	85	4.2	107	66	5.3	107	84	4.5	107	75	4.9	107	77	5.2	107
FEMALE	58	7.3	65	81	5.2	90	54	6.1	90	82	5.2	90	68	5.6	90	72	6.2	90
NEVER																		
MALE	57	3.1	309	81	2.2	434	59	2.7	434	80	2.4	434	70	2.5	434	73	2.7	434
FEMALE	55	3.0	362	79	2.2	493	49	2.6	493	81	2.3	493	63	2.5	493	69	2.7	493
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	52	5.9	70	77	4.9	99	51	5.6	99	76	5.4	99	61	5.6	99	66	6.0	99
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
PUBLIC	57	4.0	172	78	3.1	236	57	3.6	236	81	3.2	236	67	3.3	236	72	3.7	236
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
PUBLIC	61	5.1	129	83	3.5	178	60	4.2	178	83	3.6	178	72	3.8	178	75	4.2	178
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	55	2.3	598	79	1.6	830	53	2.0	830	80	1.8	830	65	1.9	830	70	2.0	830
NONPUBLIC	63	5.9	73	80	5.1	97	60	5.8	97	84	5.0	97	73	5.6	97	75	5.8	97

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 6.1a: HOW OFTEN DO YOU WORK MATH PROBLEMS IN SMALL GROUPS - GRADE 11
Z TESTS FOR DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS PROBLEMS IN GROUPS - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-0.18	-0.39	-0.30	-0.64	-0.81	-0.50
WEEKLY/NEVER	0.768	-0.50	0.726	0.227	0.216	0.196
LT WEEKLY/NEVER	1 225	1.067	1.335	0.632	1.348	0.834
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT 05)						
DAILY						
WH/BL						
WH/HISP						
BL/HISP						
WEEKLY						
WH/BL	1.586	1.399	2.714 *	1.278	2.367	1.647
WH/HISP						
BL/HISP						
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL	2.711 *	2.484	4.064 *	1.773	3.715 *	2.378
WH/HISP	1 650	1.808	1.801	1.094	2.250	1.402
BL/HISP	-0.59	-0.36	-1.46	-0.44	-0.97	-0.64
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	0.035	-0.03	1.400	0.208	0.037	0.236
WEEKLY						
M/F	0.405	-0.41	1.034	-0.27	-0.38	0
LESS THAN WEEKLY						
M/F	0.906	0 553	1 537	0.262	0.933	0.705
NEVER						
M/F	0 635	0.605	2 692	-0 05	1 767	0.959
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-1 24	-0.15	-1 15	-0.72	-1.32	-0.79

* Statistically significant difference.

TABLE 6.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS IN SMALL GROUPS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS IN SMALL GROUPS																		
DAILY	30	4.7	140	49	5.9	75	42	5.0	141	42	4.2	139	38	5.2	141	39	5.2	141
WEEKLY	36	3.5	270	51	4.6	129	50	3.8	270	49	3.0	270	42	3.8	270	45	3.9	270
LESS THAN WEEKLY	47	3.1	375	62	3.9	188	57	3.2	375	58	2.7	373	49	3.3	375	53	3.3	375
NEVER	44	1.5	1511	60	1.9	751	56	1.6	1511	56	1.3	1510	47	1.6	1511	51	1.7	1511
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	37	8.3	50	-	-	N<30	49	8.3	51	46	7.0	49	46	8.9	51	47	8.9	51
BLACK	20	7.3	48	-	-	N<30	33	8.8	48	36	7.1	48	25	8.2	48	28	8.7	48
HISPANIC	18	8.0	35	-	-	N<30	31	9.9	35	35	8.6	35	30	10.0	35	29	10.0	35
WEEKLY																		
WHITE	43	5.4	124	57	6.5	57	57	5.6	124	53	4.2	124	47	5.8	124	51	5.8	124
BLACK	27	6.3	77	48	8.9	38	38	7.1	77	41	5.7	77	31	6.7	77	35	7.1	77
HISPANIC	23	7.1	59	-	-	N<30	37	7.9	59	37	6.7	59	33	7.9	59	34	8.1	59
LESS THAN WEEKLY																		
WHITE	50	4.0	242	63	4.8	126	60	4.0	242	60	3.3	241	51	4.1	242	56	4.2	242
BLACK	31	7.0	66	52	9.9	30	43	7.8	66	50	6.5	66	37	7.9	66	40	8.0	66
HISPANIC	31	7.8	55	-	-	N<30	45	8.6	55	50	7.5	54	39	8.6	55	43	8.9	55
NEVER																		
WHITE	49	2.0	911	63	2.4	462	60	2.1	911	60	1.7	911	50	2.1	911	55	2.2	911
BLACK	27	3.2	297	48	4.8	135	42	3.7	297	42	2.9	297	36	3.6	297	38	3.7	297
HISPANIC	34	3.8	237	52	4.7	119	46	4.1	237	44	3.2	236	38	4.1	237	42	4.2	237
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY GENDER OF EXAMINEE																		
DAILY																		
MALE	27	5.8	86	48	7.8	45	41	6.4	87	42	5.2	85	38	6.5	87	39	6.6	87
FEMALE	34	7.9	54	51	9.0	30	43	8.3	54	42	7.1	54	38	8.4	54	40	8.6	54
WEEKLY																		
MALE	34	4.7	153	51	6.2	71	49	5.0	153	49	3.8	153	41	5.0	153	44	5.1	153
FEMALE	39	5.4	117	52	6.8	58	51	5.8	117	50	4.6	117	42	5.8	117	46	6.0	117
LESS THAN WEEKLY																		
MALE	45	4.6	193	60	5.4	100	56	4.5	193	57	3.9	193	47	4.6	193	51	4.7	193
FEMALE	49	4.5	182	64	5.7	88	58	4.6	182	59	3.7	180	50	4.7	182	54	4.8	182
NEVER																		
MALE	43	2.2	736	59	2.7	349	56	2.3	736	55	1.8	736	47	2.3	736	51	2.4	736
FEMALE	45	2.2	775	60	2.7	402	56	2.2	775	57	1.8	774	48	2.3	775	52	2.3	775
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	27	4.7	127	47	6.1	63	38	5.3	127	39	4.3	126	35	5.4	127	36	5.5	127
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
PUBLIC	35	3.6	257	49	4.7	122	49	3.9	257	48	3.0	257	41	3.9	257	44	4.0	257
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
PUBLIC	47	3.3	343	61	4.1	172	57	3.4	343	58	2.8	341	48	3.4	343	52	3.5	343
NONPUBLIC	47	11.2	32	-	-	N<30	57	11.1	32	60	9.2	32	54	11.3	32	56	11.6	32
NEVER																		
PUBLIC	44	1.6	1396	60	2.0	697	55	1.7	1396	56	1.3	1395	47	1.7	1396	51	1.7	1396
NONPUBLIC	46	5.7	114	64	7.7	53	61	5.8	114	61	4.4	114	51	5.9	114	55	6.1	114

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 6.2a: HOW OFTEN DO YOU WORK MATH PROBLEMS IN SMALL GROUPS - GRADE 7
Z TESTS FOR DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS MATH PROBLEMS IN SMALL GROUPS - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-2.98 *	-1.68	-2.64 *	-3.10 *	-1.68	-2.19
WEEKLY/NEVER	-2.09	-1.71	-1 50	-2.05	-1.38	-1.53
LT WEEKLY/NEVER	0.686	0.458	0.194	0.672	0.382	0.401
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	1.533		1 298	1.025	1.762	1.465
WH/HISP	1 607		1.355	1.045	1.228	1.281
BL/HISP	0 147		0.135	0.125	-0.37	-0.08
WEEKLY						
WH/BL	1 863	0 788	2 073	1.775	1.866	1.730
WH/HISP	2.186		2.008	2.106	1.495	1.649
BL/HISP	0.422		0.065	0.468	-0.18	0.055
LESS THAN WEEKLY						
WH/BL	2.344	0 991	1.981	1.337	1.583	1.747
WH/HISP	2.196		1.582	1 187	1.282	1.306
BL/HISP	0.028		-0.19	0	-0.16	-0.25
NEVER						
WH/BL	5 632 *	2.864 *	4.320 *	5 349 *	3.453 *	4.034
WH/HISP	3.523 *	2 034	3.058 *	4.316 *	2.638 *	2.866
BL/HISP	-1.29	-0.67	-0.78	-0.48	-0.42	-0.69
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2 5 FOR 4 TESTS AT .05)						
DAILY						
M/F	-0 75	-0 25	-0.10	0	0.046	-0.07
WEEKLY						
M/F	-0 61	-0 18	-0 20	-0.25	-0.18	-0.20
LESS THAN WEEKLY						
M/F	-0 68	-0.51	-0.34	-0.48	-0.51	-0.44
NEVER						
M/F	-0.81	-0 33	-0.18	-0.70	-0.18	-0.42
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB	0		-0.03	-0 26	-0 47	-0.27
NEVER						
PUB/NPUB	-0 30	-0 59	-0 86	-1.08	-0.61	-0.61

* Statistically significant difference

TABLE 6.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU WORK MATHEMATICS PROBLEMS IN SMALL GROUPS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU WORK MATH PROBLEMS IN SMALL GROUPS																		
DAILY	21	3.0	282	43	4.4	130	27	3.4	282	27	2.5	282	38	3.5	282	29	3.6	282
WEEKLY	26	2.2	581	53	3.1	276	33	2.5	581	30	1.8	581	43	2.5	581	35	2.6	581
LESS THAN WEEKLY	28	3.8	214	48	5.6	108	34	4.2	214	32	3.0	214	41	4.0	214	35	4.2	214
NEVER	31	1.7	1166	60	2.1	611	37	1.8	1166	37	1.3	1166	47	1.7	1166	40	1.9	1166
NOT REPORTED	14	4.1	101	33	7.5	40	16	4.4	101	17	3.4	101	21	4.2	101	18	4.6	101
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	25	4.3	145	52	6.1	71	28	4.9	145	31	3.7	145	41	5.0	145	33	5.1	145
BLACK	15	5.4	68	26	8.1	32	23	6.7	68	19	4.6	68	35	7.2	68	24	6.9	68
HISPANIC	18	6.5	57	-	-	N<30	24	7.4	57	27	5.5	57	27	7.2	57	23	7.4	57
WEEKLY																		
WHITE	29	3.1	316	61	4.2	150	36	3.5	316	32	2.5	316	46	3.4	316	38	3.6	316
BLACK	19	4.3	134	37	7.0	60	27	5.0	134	21	3.3	134	38	5.2	134	28	5.2	134
HISPANIC	23	5.2	103	34	7.0	54	28	5.7	103	28	4.5	103	39	5.8	103	30	6.0	103
LESS THAN WEEKLY																		
WHITE	31	5.1	129	53	7.4	67	37	5.5	129	35	3.9	129	43	5.2	129	39	5.6	129
BLACK	17	7.6	39	-	-	N<30	21	8.6	39	15	5.9	39	34	9.2	39	23	8.9	39
HISPANIC	21	8.7	36	-	-	N<30	29	9.7	36	29	7.8	36	33	9.8	36	29	9.9	36
NEVER																		
WHITE	33	2.1	792	64	2.6	415	40	2.2	792	38	1.6	792	50	2.1	792	42	2.3	792
BLACK	21	3.7	185	46	5.3	103	28	4.2	185	32	3.5	185	39	4.3	185	31	4.5	185
HISPANIC	23	4.2	149	52	6.5	74	29	4.9	149	34	3.7	149	40	4.9	149	32	5.1	149
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY GENDER OF EXAMINEE																		
DAILY																		
MALE	23	4.0	160	48	5.9	80	26	4.5	160	29	3.5	160	38	4.8	160	30	4.8	160
FEMALE	19	4.4	122	34	6.3	50	27	5.3	122	25	3.5	122	37	5.2	122	28	5.3	122
WEEKLY																		
MALE	29	3.2	306	54	4.4	134	33	3.5	306	31	2.4	306	41	3.4	306	35	3.5	306
FEMALE	23	3.1	275	51	4.5	142	33	3.7	275	30	2.7	275	44	3.6	275	35	3.8	275
LESS THAN WEEKLY																		
MALE	29	5.3	108	40	7.4	57	33	5.8	108	33	4.1	108	41	5.7	108	35	6.0	108
FEMALE	26	5.3	106	54	8.4	51	34	6.0	106	32	4.3	106	42	5.6	106	36	6.0	106
NEVER																		
MALE	32	2.4	571	62	3.0	297	39	2.6	571	37	1.9	571	48	2.5	571	41	2.7	571
FEMALE	29	2.3	595	59	3.0	314	35	2.5	595	38	1.9	595	46	2.4	595	39	2.6	595
HOW OFTEN WORK MATH PROBLEMS IN SMALL GROUPS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	21	3.2	243	44	4.7	113	26	3.7	243	28	2.8	243	36	3.8	243	28	3.8	243
NONPUBLIC	21	8.5	37	-	-	N<30	33	10.2	37	26	6.3	37	49	9.9	37	35	10.3	37
WEEKLY																		
PUBLIC	26	2.3	540	51	3.3	257	34	2.6	540	30	1.9	540	42	2.6	540	35	2.7	540
NONPUBLIC	26	8.5	40	-	-	N<30	32	9.5	40	29	6.8	40	44	8.7	40	35	9.8	40
LESS THAN WEEKLY																		
PUBLIC	28	3.9	201	49	5.8	102	34	4.3	201	32	3.0	201	41	4.1	201	36	4.4	201
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	31	1.7	1057	60	2.3	548	37	1.9	1057	37	1.4	1057	47	1.8	1057	39	1.9	1057
NONPUBLIC	31	5.6	109	62	6.7	63	40	6.1	109	41	4.5	109	51	5.7	109	43	6.2	109

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS · 1985-86 MATHEMATICS ASSESSMENT

TABLE 6.3a: HOW OFTEN DO YOU WORK MATH PROBLEMS IN SMALL GROUPS - GRADE 3
Z TESTS FOR DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDENT WORKS MATH PROBLEMS IN SMALL GROUPS - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-2.73 *	-3.66 *	-2.67 *	-3.43 *	-2.41 *	-2.66
WEEKLY/NEVER	-1.61	-2.02	-1.18	-3.09	-1.49	-1.47
LT WEEKLY/NEVER	-0.70	-2 11	-0.68	-1.53	-1.37	-0.95
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	1.397	2.542	0.587	2.017	0.777	1.021
WH/HISP	0.894		0.474	0.678	1.664	1.008
BL/HISP	-0.31		-0.07	-1.03	0.767	0.029
WEEKLY						
WH/BL	1 903	2.906 *	1.481	2.698	1.275	1.580
WH/HISP	1.021	3.245 *	1.193	0.840	1.049	1.150
BL/HISP	-0.57	0.271	-0.13	-1.22	-0.11	-0 25
LESS THAN WEEKLY						
WH/BL	1 558		1 604	2.875 *	0.879	1.516
WH/HISP	1.067		0.717	0.730	0.957	0.824
BL/HISP	-0 30		-0.64	-1.41	0.096	-0.48
NEVER						
WH/BL	2.741	2.969 *	2.458	1.600	2.348	2.228
WH/HISP	2.076	1.699	2.017	1.009	1.796	1.802
BL/HISP	-0.33	-0.66	-0.15	-0.40	-0.26	-0.17
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	0 688	1.645	-0.05	0.939	0.240	0 335
WEEKLY						
M/F	1.274	0 526	0 039	0.167	-0.66	0
LESS THAN WEEKLY						
M/F	0 398	-1 17	-0.10	0.152	-0.13	-0.08
NEVER						
M/F	0.786	0.914	0.879	-0.37	0 494	0.618
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
PUB/NPUB	-0.03		-0 69	0.350	-1.23	-0.58
WEEKLY						
PUB/NPUB	-0 02		0.121	0.156	-0.21	0 009
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-0 08	-0.25	-0 58	-0 93	-0.74	-0 60

* Statistically significant difference

TABLE 7.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU USE A MATHEMATICS WORKBOOK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN USE A MATH WORKBOOK																		
DAILY	48	4.1	177	71	3.5	244	45	3.7	244	75	3.6	244	54	3.6	244	63	4.0	244
WEEKLY	57	3.3	283	80	2.4	396	54	2.9	396	80	2.6	396	65	2.8	396	70	3.0	396
LESS THAN WEEKLY	64	4.0	167	82	3.1	217	63	3.7	217	84	3.1	217	76	3.4	217	76	3.7	217
NEVER	58	2.5	460	82	1.8	633	58	2.2	633	82	2.0	633	69	2.1	633	73	2.3	633
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	57	1.6	1084	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	71	1.5	1505
HOW OFTEN USE A MATH WORKBOOK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	53	5.5	101	76	4.3	138	50	4.9	138	77	4.6	138	58	4.8	138	66	5.2	138
BLACK	36	9.6	34	60	8.7	46	32	8.5	46	71	8.6	46	43	8.5	46	55	9.6	46
HISPANIC	-	-	N<30	62	9.1	43	36	9.1	43	70	8.9	43	45	8.7	43	56	9.9	43
WEEKLY																		
WHITE	62	4.0	189	83	2.8	274	58	3.5	274	83	2.9	274	70	3.3	274	74	3.5	274
BLACK	44	8.5	46	69	7.0	60	36	7.1	60	69	7.8	60	43	8.0	60	56	8.4	60
HISPANIC	46	9.7	36	66	8.8	46	40	9.0	46	72	8.6	46	50	8.6	46	59	9.5	46
LESS THAN WEEKLY																		
WHITE	66	4.5	138	83	3.4	174	65	4.3	174	85	3.4	174	77	3.8	174	78	4.1	174
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	60	2.9	341	84	2.0	469	61	2.6	469	84	2.2	469	73	2.4	469	75	2.6	469
BLACK	44	6.9	66	72	5.7	88	36	5.9	88	73	6.2	88	52	6.2	88	60	6.9	88
HISPANIC	50	9.2	41	74	6.2	56	53	7.4	56	78	6.9	56	60	7.4	56	57	7.9	56
HOW OFTEN USE A MATH WORKBOOK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	52	5.4	88	73	4.5	129	51	5.1	129	75	4.8	129	59	4.9	129	66	5.3	129
FEMALE	43	6.2	89	67	5.3	115	38	5.4	115	74	5.3	115	48	5.5	115	59	6.0	115
WEEKLY																		
MALE	61	4.6	144	80	3.5	195	59	4.0	195	80	3.7	195	67	3.9	195	72	4.2	195
FEMALE	54	4.9	139	80	3.4	201	49	4.1	201	80	3.6	201	64	3.9	201	69	4.2	201
LESS THAN WEEKLY																		
MALE	65	5.9	73	83	4.5	101	68	5.3	101	84	4.5	101	79	4.8	101	79	5.2	101
FEMALE	62	5.6	94	82	4.2	116	58	5.3	116	84	4.4	116	74	4.8	116	74	5.2	116
NEVER																		
MALE	58	3.6	229	82	2.5	308	62	3.1	308	82	2.8	308	71	2.9	308	74	3.2	308
FEMALE	57	3.6	231	81	2.6	325	53	3.2	325	82	2.8	325	68	3.0	325	72	3.2	325
HOW OFTEN USE A MATH WORKBOOK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	46	4.3	165	70	3.6	229	43	3.8	229	74	3.7	229	52	3.9	229	62	4.2	229
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
PUBLIC	58	3.5	259	80	2.5	365	55	3.0	365	80	2.7	365	65	2.9	365	71	3.1	365
NONPUBLIC	-	-	N<30	77	9.6	31	46	10.4	31	84	8.9	31	67	10.3	31	70	11.0	31
LESS THAN WEEKLY																		
PUBLIC	61	4.5	146	84	3.1	190	62	4.0	190	83	3.4	190	77	3.5	190	76	3.9	190
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	57	2.7	403	82	1.9	564	57	2.4	564	82	2.1	564	69	2.2	564	73	2.4	564
NONPUBLIC	62	7.3	57	84	5.5	69	64	6.6	69	84	5.8	69	73	6.4	69	76	6.7	69

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 7 1a· HOW OFTEN DO YOU USE A MATH WORKBOOK - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE MATH WORKBOOK COMPARISONS (Z=2 4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-2.06	-2 87 *	-2.94 *	-1.82	-3.67 *	-2.25
WEEKLY/NEVER	-0 07	-0.69	-1 01	-0 65	-1.20	-0.72
LT WEEKLY/NEVER	1 216	0 169	1.259	0.540	1.706	0.737
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.77 FOR 9 TESTS .05)						
DAILY						
WH/BL	1 520	1 622	1 845	0.633	1.541	1.012
WH/HISP		1 324	1.370	0.671	1.317	0.875
BL/HISP		-0 19	-0 32	0.040	-0.15	-0.09
WEEKLY						
WH/BL	1 847	1 514	2.750	1.635	3.145 *	1.963
WH/HISP	1 519	1 343	1 848	1 194	2 223	1.508
BL/HISP	-0 11	0 239	-0 34	-0.24	-0.57	-0.20
LESS THAN WEEKL						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL	2 117	1 871	3 760 *	1.642	3.057 *	2.057
WH/HISP	1 085	1 488	0 957	0.785	1.666	0.994
BL/HISP	-0 46	-0 19	-1 78	-0.54	-0.75	-0.64
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2 5 FOR 4 TESTS AT .05)						
DAILY						
M/F	1 113	0 846	1 826	0.126	1.514	0.793
WEEKLY						
M/F	0.954	-0.06	1 669	-0 17	0 521	0.354
LESS THAN WEEKLY						
M/F	0.383	0 228	1 333	0 111	0.735	0.594
NEVER						
M/F	0 098	0 248	2 190	-0 10	0.601	0.485
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB		0 333	0 844	-0 43	-0 24	0.078
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-0 60	-0 46	-0 99	-0.38	-0 61	-0 50

* Statistically significant difference

TABLE 7.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU USE A MATHEMATICS WORKBOOK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN USE A MATH WORKBOOK																		
DAILY	38	2.3	608	53	3.1	306	49	2.5	609	48	2.0	608	42	2.5	609	45	2.6	609
WEEKLY	45	2.0	858	60	2.6	423	55	2.1	858	56	1.7	857	47	2.2	858	51	2.2	858
LESS THAN WEEKLY	50	3.1	383	64	3.8	195	61	3.1	383	61	2.5	382	52	3.2	383	56	3.3	383
NEVER	40	2.8	446	58	3.4	217	54	3.0	446	54	2.4	444	46	3.0	446	49	3.1	446
NOT REPORTED	20	9.1	30	-	-	N<30	31	9.7	30	43	8.0	30	30	10.1	30	30	10.4	30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN USE A MATH WORKBOOK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	45	3.4	303	57	4.5	152	55	3.6	304	53	2.9	303	47	3.7	304	51	3.7	304
BLACK	27	4.5	153	43	6.4	72	37	5.0	153	39	4.0	153	33	4.8	153	34	5.1	153
HISPANIC	27	4.8	123	49	6.2	69	40	5.5	123	42	4.5	123	34	5.5	123	36	5.6	123
WEEKLY																		
WHITE	51	2.8	473	64	3.4	233	60	2.9	473	61	2.3	472	51	2.9	473	56	3.0	473
BLACK	28	4.1	190	[illegible]	5.8	93	42	4.6	190	44	3.7	190	34	4.5	190	37	4.7	190
HISPANIC	32	4.5	161	51	5.9	79	44	5.0	161	44	4.1	161	37	5.0	161	41	5.1	161
LESS THAN WEEKLY																		
WHITE	52	3.7	272	66	4.5	142	64	3.7	272	64	3.0	272	53	3.9	272	58	3.9	272
BLACK	31	7.5	55	-	-	N<30	45	8.6	55	47	6.0	55	40	8.5	55	41	8.7	55
HISPANIC	37	9.5	38	-	-	N<30	47	10.2	38	46	8.7	37	36	10.3	38	42	10.4	38
NEVER																		
WHITE	43	3.6	277	60	4.1	140	57	3.8	277	57	3.0	276	49	3.8	277	52	3.9	277
BLACK	24	5.5	91	46	8.5	41	40	6.5	91	41	5.3	91	31	6.3	91	35	6.6	91
HISPANIC	31	7.4	64	-	-	N<30	45	7.7	64	42	6.1	63	41	7.7	64	42	8.0	64
HOW OFTEN USE A MATH WORKBOOK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	37	3.2	329	54	4.3	157	48	3.4	330	47	2.7	329	41	3.4	330	45	3.5	330
FEMALE	39	3.4	279	51	4.5	149	50	3.7	279	49	3.0	279	43	3.8	279	47	3.8	279
WEEKLY																		
MALE	43	2.8	427	61	3.5	203	55	3.0	427	57	2.4	426	47	3.0	427	51	3.1	427
FEMALE	46	2.9	431	59	3.7	220	56	3.0	431	56	[illegible]	431	46	3.1	431	51	3.1	431
LESS THAN WEEKLY																		
MALE	49	4.7	170	61	5.7	88	61	4.7	170	58	3.9	170	51	4.8	170	55	4.9	170
FEMALE	51	4.2	213	67	5.0	107	61	4.2	213	64	3.3	212	52	4.4	213	56	4.4	213
NEVER																		
MALE	37	3.7	242	53	4.7	117	53	4.0	242	54	3.2	242	45	4.1	242	47	4.2	242
FEMALE	43	4.2	204	64	4.9	100	55	4.3	204	55	3.5	202	47	4.4	204	51	4.5	204
HOW OFTEN USE A MATH WORKBOOK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	38	2.5	551	52	3.3	273	48	2.6	551	47	2.1	551	41	2.7	551	44	2.7	551
NONPUBLIC	45	8.1	56	60	9.7	32	59	8.0	57	56	6.6	56	50	8.4	57	54	8.5	57
WEEKLY																		
PUBLIC	45	2.1	805	59	2.6	397	55	2.2	805	56	1.8	804	46	2.2	805	51	2.3	805
NONPUBLIC	44	8.9	53	62	10.6	26	60	8.5	53	63	7.2	53	50	8.8	53	54	9.0	53
LESS THAN WEEKLY																		
PUBLIC	49	3.2	358	63	3.9	180	60	3.2	358	61	2.6	357	51	3.4	358	55	3.4	358
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	39	2.9	408	57	3.5	202	53	3.1	403	53	2.5	406	45	3.1	408	48	3.2	408
NONPUBLIC	44	9.5	38	-	-	N<30	57	10.0	38	64	6.9	38	53	10.0	38	55	10.3	38

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 7.2a: HOW OFTEN DO YOU USE A MATH WORKBOOK - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE MATH WORKBOOK - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-0.41	-1.19	-1.26	-1.87	-0.89	-0.84
WEEKLY/NEVER	1 447	0 352	0.329	0.821	0.216	0.554
LT WEEKLY/NEVER	2 421 *	1.165	1.674	2.119	1.313	1.574
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	3.106 *	1 7o1	2.963 *	2.838	2.191	2.672
WH/HISP	3.039 *	1 041	2.363	1.993	1.935	2.195
BL/HISP	0.076	-0.65	-0.39	-0.54	-0.06	-0.26
WEEKLY						
WH/BL	4 631 *	1.924	3.458 *	3.883 *	3.175 *	3.302
WH/HISP	3 580 *	1.814	2.779	3.637 *	2.363	2.515
BL/HISP	-0.65	-0.07	-0.39	0	-0.52	-0.49
LESS THAN WEEKLY						
WH/BL	2.605		1.986	2.619	1.387	1.796
WH/HISP	1.501		1.498	1.975	1.552	1.490
BL/HISP	-0 52		-0.18	0.057	0.396	-0.03
NEVER						
WH/BL	2.996 *	1 518	2 199	2.590	2.353	2.180
WH/HISP	1 494		1 464	2.088	0.856	1.134
BL/HISP	-0.79		-0.40	-0.18	-0.99	-0.64
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	-0 53	0 465	-0.29	-0.61	-0 37	-0.38
WEEKLY						
M/F	-0 73	0 428	-0.18	0.173	0.092	-0 13
LESS THAN WEEKLY						
M/F	-0 31	-0 77	0.047	-1 11	-0.15	-0.18
NEVER						
M/F	-1 12	-1 68	-0 45	-0 21	-0.44	-0.59
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
PUB/NPUB	-0.84	-0.80	-1.33	-1 26	-0.94	-1.08
WEEKLY						
PUB/NPUB	0 054	-0 25	-0 61	-1 01	-0.37	-0.39
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB	-0 48		-0 38	-1 48	-0 81	-0.63

* Statistically significant difference

TABLE 7.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU USE A MATHEMATICS WORKBOOK?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN USE A MATH WORKBOOK																		
DAILY	30	1.9	907	60	2.4	458	36	2.1	907	36	1.5	907	46	2.0	907	39	2.1	907
WEEKLY	29	1.9	905	55	2.6	442	36	2.1	905	35	1.5	905	45	2.0	905	38	2.1	905
LESS THAN WEEKLY	28	5.2	114	37	7.3	50	32	5.6	114	23	3.6	114	42	5.6	114	33	5.8	114
NEVER	22	2.8	324	50	4.0	170	29	3.3	324	27	2.5	324	38	3.2	324	31	3.3	324
NOT REPORTED	13	3.9	94	30	7.2	45	14	4.2	94	18	4.0	94	18	3.9	94	16	4.5	94
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
HOW OFTEN USE A MATH WORKBOOK BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	32	2.4	593	63	3.0	303	38	2.6	593	38	1.8	593	48	2.4	593	41	2.6	593
BLACK	19	3.9	158	43	5.7	80	28	4.6	158	27	3.5	158	39	4.8	158	30	4.8	158
HISPANIC	24	4.8	122	52	7.3	62	29	5.4	122	33	4.1	122	39	5.3	122	32	5.6	122
WEEKLY																		
WHITE	32	2.4	561	61	3.2	279	39	2.7	561	38	1.9	561	49	2.5	561	41	2.7	561
BLACK	20	3.9	168	35	6.2	80	26	4.4	168	24	3.1	168	39	4.6	168	28	4.6	168
HISPANIC	22	4.5	138	32	6.2	67	30	5.1	138	31	4.0	138	36	5.1	138	30	5.2	138
LESS THAN WEEKLY																		
WHITE	33	8.2	52	-	-	N<30	37	8.7	52	24	5.2	52	45	8.4	52	38	8.9	52
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	22	8.5	34	-	-	N<30	22	8.8	34	25	6.7	34	40	10.1	34	27	9.8	34
NEVER																		
WHITE	24	3.9	182	57	5.5	96	32	4.5	182	28	3.3	182	42	4.4	182	34	4.6	182
BLACK	18	5.4	76	41	8.1	41	23	6.2	76	24	5.1	76	31	6.4	76	25	6.6	76
HISPANIC	17	6.7	52	-	-	N<30	25	7.7	52	26	5.7	52	30	7.2	52	25	7.8	52
HOW OFTEN USE A MATH WORKBOOK BY GENDER OF EXAMINEE																		
DAILY																		
MALE	32	2.6	470	61	3.2	244	38	2.9	470	35	2.1	470	47	2.8	470	40	2.9	470
FEMALE	27	2.6	437	58	3.7	214	35	3.0	437	37	2.1	437	46	2.8	437	38	3.0	437
WEEKLY																		
MALE	31	2.7	452	56	3.7	210	36	2.9	452	37	2.0	452	45	2.8	452	38	3.0	452
FEMALE	28	2.6	453	54	3.5	232	35	2.9	453	34	2.1	453	46	2.8	453	37	2.9	453
LESS THAN WEEKLY																		
MALE	29	7.1	62	-	-	N<30	32	7.6	62	25	5.0	62	44	7.6	62	35	7.9	62
FEMALE	26	7.7	52	-	-	N<30	32	8.3	52	21	5.2	52	39	8.2	52	32	8.6	52
NEVER																		
MALE	21	3.9	168	49	5.7	86	28	4.5	168	24	3.2	168	36	4.4	168	29	4.6	168
FEMALE	22	4.0	156	51	5.7	84	30	4.8	156	29	3.7	156	39	4.7	156	32	4.9	156
HOW OFTEN USE A MATH WORKBOOK BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	30	1.9	823	59	2.6	411	36	2.1	823	35	1.5	823	46	2.1	823	39	2.2	823
NONPUBLIC	27	6.2	84	63	7.3	47	38	6.9	84	42	5.3	84	51	6.7	84	42	7.1	84
WEEKLY																		
PUBLIC	29	1.9	826	56	2.7	402	36	2.2	826	35	1.5	826	45	2.1	826	38	2.2	826
NONPUBLIC	29	6.4	76	51	8.8	39	37	7.1	76	36	5.0	76	51	6.4	76	40	7.3	76
LESS THAN WEEKLY																		
PUBLIC	27	5.3	105	37	7.4	48	31	5.8	105	25	3.9	105	41	5.8	105	33	6.0	105
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	21	2.9	295	49	4.2	154	28	3.4	295	26	2.6	295	37	3.3	295	30	3.5	295
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 7.3a: HOW OFTEN DO YOU USE A MATH WORKBOOK - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE MATH WORKBOOK - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	2.325	2.059	1.889	3.242 *	2.240	2.075
WEEKLY/NEVER	2.233	1.111	1.784	3.075 *	2.048	1.820
LT WEEKLY/NEVER	1.016	-1.51	0.522	-0.77	0.638	0.417
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.81 FOR 10 TESTS AT .05)						
DAILY						
WH/BL	2.782	3.067 *	1.892	2.710	1.719	2.046
WH/HISP	1.430	1.350	1.612	1.146	1.552	1.498
BL/HISP	-0.82	-0.99	-0.05	-1.01	-0.01	-0.27
WEEKLY						
WH/BL	2.710	3.739 *	2 445	3.763 *	1.880	2.417
WH/HISP	2.072	4.211 *	1 566	1.407	2.171	1.835
BL/HISP	-0 30	0.400	-0 53	-1.47	0.349	-0.71
LESS THAN WEEKLY						
WH/BL						
WH/HISP	0 915		1.274	-0.16	0.351	0.792
BL/HISP						
NEVER						
WH/BL	1.044	1.662	1.193	0 643	1.481	1.097
WH/HISP	0 986		0.762	0.241	1.506	0.935
BL/HISP	0 081		-0.24	-0.29	0.124	-0.02
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	1 538	0.426	0.755	-0.40	0.254	0.595
WEEKLY						
M/F	0 778	0.410	0.243	0.816	-0.27	0.237
LESS THAN WEEKLY						
M/F	0 277		0.035	0.469	0.473	0.223
NEVER						
M/F	-0.26	-0.19	-0.25	-0.95	-0.43	-0.40
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB	0 432	-0.56	-0.30	-1.22	-0.81	-0.40
WEEKLY						
PUB/NPUB	-0.01	0.555	-0.22	-0.20	-0.85	-0.26
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 8.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU TAKE MATHEMATICS TESTS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU TAKE MATH TESTS																		
DAILY	52	8.2	50	76	6.8	44	52	8.4	53	72	6.9	50	53	8.8	53	58	8.5	53
WEEKLY	55	1.8	896	62	1.5	750	54	1.7	1192	72	1.7	896	52	1.8	1192	56	1.8	1192
LESS THAN WEEKLY	62	3.0	312	68	2.3	262	63	2.7	460	75	2.7	312	58	2.8	460	63	2.8	460
NEVER	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	56	1.5	1304	64	1.2	1098	56	1.4	1755	72	1.4	1304	53	1.5	1755	57	1.5	1755
HOW OFTEN TAKE MATH TESTS BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	57	10.3	32	-	-	N<30	57	10.5	34	76	8.6	32	56	11.0	34	62	10.6	34
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
WHITE	59	2.2	598	65	1.8	505	59	2.1	784	74	2.0	598	56	2.2	784	60	2.2	784
BLACK	41	4.4	165	54	3.6	138	35	4.0	229	61	4.2	165	36	4.0	229	40	4.2	229
HISPANIC	48	5.6	102	54	4.8	81	46	4.9	142	66	5.3	102	45	5.2	142	49	5.3	142
LESS THAN WEEKLY																		
WHITE	62	3.3	248	68	2.5	210	65	3.0	362	75	3.0	248	59	3.2	362	64	3.2	362
BLACK	-	-	N<30	-	-	N<30	53	8.6	46	-	-	N<30	47	9.0	46	54	9.2	46
HISPANIC	-	-	N<30	-	-	N<30	52	9.9	37	-	-	N<30	51	10.2	37	53	10.5	37
NEVER																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HOW OFTEN TAKE MATH TESTS BY GENDER OF EXAMINEE																		
DAILY																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
MALE	58	2.5	470	63	2.0	397	57	2.4	626	71	2.3	470	55	2.5	626	58	2.5	626
FEMALE	52	2.7	426	61	2.3	353	50	2.5	566	72	2.5	426	49	2.6	566	53	2.7	566
LESS THAN WEEKLY																		
MALE	64	4.1	160	71	2.9	135	67	3.7	229	76	3.8	160	62	3.9	229	66	4.0	229
FEMALE	59	4.3	152	64	3.6	127	59	3.9	231	74	3.9	152	55	4.0	231	59	4.1	231
NEVER																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HOW OFTEN TAKE MATH TESTS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	51	8.4	45	76	7.3	39	50	8.8	48	70	7.4	45	53	9.2	48	57	9.0	48
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
WEEKLY																		
PUBLIC	55	1.9	824	62	1.6	689	54	1.8	1094	7[illegible]	1.8	824	51	1.9	1094	56	1.9	1094
NONPUBLIC	63	6.3	72	68	5.3	61	54	6.1	98	79	5.7	72	56	6.4	98	59	6.4	98
LESS THAN WEEKLY																		
PUBLIC	62	3.1	275	67	2.4	232	62	2.9	401	74	2.9	275	58	3.0	401	62	3.0	401
NONPUBLIC	60	9.4	37	69	6.8	30	68	7.2	59	78	7.9	37	62	7.7	59	66	7.8	59
NEVER																		
PUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 8.1a: HOW OFTEN DO YOU TAKE MATH TESTS - GRADE 11
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
HOW OFTEN TAKE MATH TESTS - COMPARISONS						
DAILY/NEVER	(NONE OF THESE TESTS SHOWED SIGNIFICANT DIFFERENCES, BUT SINCE THE					
WEEKLY/NEVER	CELLS FOR THE "NEVER" CATEGORY CONTAIN LESS THAN 30 SUBJECTS,					
LT WEEKLY/NEVER	THE TESTS CAN NO. BE REPORTED)					
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL						
WH/HISP						
BL/HISP						
WEEKLY						
WH/BL	3.662 *	2.581	5 348 *	2.906 *	4.190 *	4.105
WH/HISP	1.845	2.153	2.442	1.527	1.932	1.991
BL/HISP	-0.91	0.116	-1.75	-0.72	-1.28	-1.21
LESS THAN WEEKLY						
WH/BL			1.272		1.255	1.028
WH/HISP			1 268		0.816	0 946
BL/HISP			0 114		-0.24	0.028
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=1 96 FOR 1 TEST AT 05)						
DAILY						
M/F						
WEEKLY						
M/F	1 591	0 625	2.016	-0.23	1.634	1 232
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB	-1.20	-1 15	-0 01	-1.31	-0.62	-0.52
LT WEEKLY						
PUB/NPUB	0.161	-0.17	-0 77	-0.44	-0.54	-0.48
NEVER						
PUB/NPUB						

* Statistically significant difference

TABLE 8.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU TAKE MATHEMATICS TESTS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU TAKE MATH TESTS																		
DAILY	34	3.4	286	47	4.2	154	44	3.7	286	45	3.1	286	39	3.7	286	41	3.8	286
WEEKLY	41	1.6	1322	58	2.1	666	54	1.7	1323	55	1.4	1319	46	1.7	1323	50	1.8	1323
LESS THAN WEEKLY	50	2.4	636	65	3.0	297	60	2.4	636	58	1.9	635	51	2.5	636	55	2.6	636
NEVER	29	9.4	34	·	·	N<30	38	10.3	34	31	7.8	34	37	10.7	34	36	10.6	34
NOT REPORTED	25	7.6	47	·	·	N<30	29	8.1	47	33	6.8	47	28	8.1	47	29	8.3	47
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
HOW OFTEN TAKE MATH TESTS BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	40	5.5	123	54	6.0	68	51	5.8	123	51	5.0	123	44	5.8	123	47	6.0	123
BLACK	24	5.7	89	37	7.7	49	35	6.5	89	36	5.0	89	29	6.2	89	31	6.5	89
HISPANIC	23	6.3	64	36	9.5	32	33	7.4	64	34	6.1	64	31	7.5	64	31	7.6	64
WEEKLY																		
WHITE	47	2.3	722	61	2.8	366	58	2.3	723	60	1.9	720	49	2.4	723	54	2.4	723
BLACK	28	3.1	316	49	4.3	155	41	3.6	316	44	2.9	316	34	3.4	316	37	3.6	316
HISPANIC	29	3.8	222	53	5.0	113	46	4.2	222	43	3.4	221	38	4.2	222	41	4.3	222
LESS THAN WEEKLY																		
WHITE	52	2.8	465	67	3.5	223	63	2.8	465	60	2.2	465	53	3.0	465	58	3.0	465
BLACK	30	6.6	69	·	·	N<30	43	7.6	69	46	5.9	69	41	7.8	69	40	7.8	69
HISPANIC	39	6.7	83	56	7.7	41	45	7.1	83	51	6.0	82	38	6.9	83	44	7.2	83
NEVER																		
WHITE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
BLACK	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HISPANIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HOW OFTEN TAKE MATH TESTS BY GENDER OF EXAMINEE																		
DAILY																		
MALE	32	4.6	149	43	5.7	78	42	5.1	149	44	4.4	149	38	5.0	149	40	5.1	149
FEMALE	36	5.0	137	53	6.1	76	46	5.3	137	46	4.2	137	41	5.3	137	43	5.5	137
WEEKLY																		
MALE	39	2.3	654	58	3.0	318	54	2.4	655	54	2.0	653	45	2.5	655	48	2.5	655
FEMALE	44	2.3	668	58	2.9	348	54	2.4	668	57	2.0	666	46	2.4	668	51	2.5	668
LESS THAN WEEKLY																		
MALE	49	3.2	337	63	4.1	155	59	3.3	337	58	2.7	337	51	3.4	337	54	3.5	337
FEMALE	51	3.5	299	67	4.5	142	62	3.6	299	59	2.8	298	51	3.8	299	56	3.8	299
NEVER																		
MALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
FEMALE	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
HOW OFTEN TAKE MATH TESTS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	34	3.5	272	48	4.2	146	44	3.8	272	45	3.2	272	39	3.8	272	41	3.9	272
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
WEEKLY																		
PUBLIC	41	1.7	1216	57	2.2	610	53	1.8	1216	55	1.5	1213	45	1.8	1216	49	1.9	1216
NONPUBLIC	42	5.8	106	66	7.2	56	62	5.8	107	62	4.7	106	52	6.1	107	56	6.2	107
LESS THAN WEEKLY																		
PUBLIC	49	2.5	586	65	·	272	60	2.5	586	58	2.0	585	51	2.6	586	55	2.7	586
NONPUBLIC	54	9.0	50	·	·	N<30	61	8.9	50	60	7.1	50	52	9.0	50	58	9.2	50
NEVER																		
PUBLIC	25	9.4	32	54	5.2	84	37	10.5	32	32	7.7	32	33	11.0	32	33	10.7	32
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 8.2a: HOW OFTEN DO YOU TAKE MATH TESTS - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNOMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
HOW OFTEN TAKE MATH TESTS - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	0.459		0.510	1.723	0.221	0.507
WEEKLY/NEVER	1.265		1.498	3.105 *	0.806	1.303
LT WEEKLY/NEVER	2 139		2.044	3.436 *	1.297	1.807
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.77 FOR 9 TESTS AT .05)						
DAILY						
WH/BL	2.128	1.754	1.812	2.213	1.761	1.863
WH/HISP	2.140	1.605	1.916	2.267	1.454	1.735
BL/HISP	0.129	0.065	0.222	0.279	-0.11	0.030
WEEKLY						
WH/BL	4.922 *	2.375	3.982 *	4.488 *	3.614 *	3.752
WH/HISP	3.882 *	1.322	2.684	4.166 *	2.261	2.563
BL/HISP	-0.38	-0.69	-0.74	0.179	-0.77	-0.63
LESS THAN WEEKLY						
WH/BL	3.147 *		2.522	2.193	1.492	2.073
WH/HISP	1.853	1.296	2.312	1.445	1.982	1.796
BL/HISP	-0.98		-0.27	-0.54	0.229	-0.31
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
M/F	-0.59	-1 16	-0.46	-0.35	-0.32	-0.43
WEEKLY						
M/F	-1.59	0.145	-0.14	-1.04	-0.51	-0.61
LESS THAN WEEKLY						
M/F	-0.29	-0 78	-0.59	-0.18	-0.11	-0.33
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB	-0 06	-1.25	-1.42	-1.52	-1.21	-1.06
LT WEEKLY						
PUB/NPUB	-0.52		-0 10	-0.27	-0.14	-0.29
NEVER						
PUB/NPUB						

* Statistically significant difference

TABLE 8.3: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU TAKE MATHEMATICS TESTS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN DO YOU TAKE MATH TESTS																		
DAILY	22	4.5	131	49	5.7	66	28	5.1	131	31	3.8	131	37	5.1	131	31	5.3	131
WEEKLY	27	1.7	1049	52	2.4	518	34	1.9	1049	33	1.4	1049	44	1.9	1049	36	1.9	1049
LESS THAN WEEKLY	33	2.5	519	62	3.2	256	38	2.7	519	35	1.9	519	48	2.6	519	40	2.8	519
NEVER	27	2.3	551	55	3.2	284	34	2.6	551	34	1.9	551	43	2.5	551	36	2.7	551
NOT REPORTED	14	4.1	94	36	7.6	41	15	4.3	94	21	3.8	94	19	4.2	94	17	4.6	94
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
HOW OFTEN TAKE MATH TESTS BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	26	6.9	62	60	8.2	31	31	7.8	62	33	5.6	62	41	7.4	62	34	7.9	62
BLACK	16	8.0	34	·	·	N<30	20	9.3	34	28	7.6	34	28	9.8	34	23	9.8	34
HISPANIC	18	8.9	31	·	·	N<30	22	9.7	31	28	8.0	31	28	10.2	31	24	10.3	31
WEEKLY																		
WHITE	30	2.3	589	58	3.1	292	36	2.6	589	36	1.8	589	47	2.5	589	39	2.6	589
BLACK	20	3.4	227	42	5.3	107	27	3.8	227	23	2.8	227	41	4.0	227	29	4.0	227
HISPANIC	23	3.9	186	38	5.5	94	30	4.4	186	32	3.3	186	37	4.4	186	31	4.5	186
LESS THAN WEEKLY																		
WHITE	35	3.0	365	65	3.8	186	41	3.3	365	36	2.3	365	51	3.1	365	43	3.4	365
BLACK	24	6.0	78	42	8.9	36	27	6.6	78	25	4.6	78	36	6.7	78	29	6.9	78
HISPANIC	26	7.1	55	·	·	N<30	27	7.7	55	30	6.3	55	44	7.7	55	32	8.1	55
NEVER																		
WHITE	30	2.9	370	60	4.0	192	37	3.3	370	35	2.4	370	45	3.0	370	39	3.3	370
BLACK	15	4.7	88	34	7.2	50	28	6.1	88	28	4.7	88	33	5.8	88	27	6.2	88
HISPANIC	19	5.6	77	42	8.1	37	25	6.4	77	29	4.9	77	32	6.3	77	27	6.6	77
HOW OFTEN TAKE MATH TESTS BY GENDER OF EXAMINEE																		
DAILY																		
MALE	22	6.1	74	53	6.4	38	28	6.8	74	29	5.1	74	38	6.9	74	31	7.1	74
FEMALE	23	6.8	57	·	·	N<30	28	7.8	57	34	5.8	57	35	7.5	57	30	8.0	57
WEEKLY																		
MALE	29	2.4	521	54	3.4	251	34	2.7	521	33	1.9	521	44	2.7	521	36	2.8	521
FEMALE	25	2.3	528	51	3.3	267	33	2.7	528	33	2.0	528	44	2.6	528	36	2.7	528
LESS THAN WEEKLY																		
MALE	35	3.6	263	64	4.3	130	38	3.8	263	35	2.7	263	47	3.6	263	41	3.9	263
FEMALE	30	3.5	256	60	4.9	126	38	3.9	256	35	2.8	256	49	3.6	256	40	4.0	256
NEVER																		
MALE	28	3.2	290	54	4.5	148	36	3.7	290	34	2.6	290	43	3.4	290	37	3.7	290
FEMALE	26	3.4	261	57	4.6	136	33	3.7	261	34	2.8	261	42	3.5	261	35	3.8	261
HOW OFTEN TAKE MATH TESTS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	23	4.7	125	51	5.8	64	28	5.2	125	30	4.0	125	37	5.2	125	31	5.4	125
NONPUBLIC	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30	·	·	N<30
WEEKLY																		
PUBLIC	26	1.8	951	51	2.5	465	34	2.0	951	33	1.4	951	44	1.9	951	36	2.0	951
NONPUBLIC	29	5.7	97	60	7.3	52	34	6.3	97	37	4.8	97	50	6.2	97	40	6.5	97
LESS THAN WEEKLY																		
PUBLIC	33	2.6	467	62	3.4	228	37	2.9	467	34	2.0	467	47	2.7	467	40	2.9	467
NONPUBLIC	28	8.0	50	·	·	N<30	42	8.8	50	39	6.4	50	52	7.9	50	42	8.8	50
NEVER																		
PUBLIC	27	2.4	504	56	3.3	262	34	2.7	504	34	2.0	504	43	2.6	504	36	2.8	504
NONPUBLIC	26	8.1	47	·	·	N<30	34	9.0	47	27	5.8	47	43	8.2	47	34	9.2	47

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS · 1985-86 MATHEMATICS ASSESSMENT

TABLE 8.3a: HOW OFTEN DO YOU TAKE MATH TESTS - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
HOW OFTEN TAKE MATH TESTS - COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	-0.92	-0.90	-1.12	-0.60	-1.06	-0.91
WEEKLY/NEVER	-0.13	-0.82	-0.24	-0.21	0.552	0
LT WEEKLY/NEVER	1 585	1.448	0.876	0.403	1.462	1.146
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.86 FOR 12 TESTS AT .05)						
DAILY						
WH/BL	0.957		0.910	0.529	1.041	0.890
WH/HISP	0 665		0.773	0.574	0.992	0 784
BL/HISP	-0.21		-0 10	0.054	-0.02	-0.07
WEEKLY						
WH/BL	2.378	2.562	2 119	3.854 *	1.371	2.038
WH/HISP	1.575	3.139 *	1.297	1.155	1 947	1.553
BL/HISP	-0 50	0 546	-0 53	-1.92	0.554	-0.28
LESS THAN WEEKLY						
WH/BL	1.624	2.393	1.936	2.239	1.908	1.845
WH/HISP	1 198		1 616	0.947	0.841	1.232
BL/HISP	-0.'7		-0 07	-0 66	-0.69	-0.31
NEVER						
WH/BL	2 747	3.190 *	1.241	1.343	1.840	1.675
WH/HISP	1.775	2 083	1 582	0 991	1.884	1.632
BL/HISP	-0 54	-0.68	0 315	-0.24	0.127	0.044
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
DAILY						
M/F	-0 16		-0 07	-0.71	0.384	0 028
WEEKLY						
M/F	1 036	0 594	0 264	0	-0.08	0 206
LESS THAN WEEKLY						
M/F	1 141	0 678	0 018	-0 07	-0.36	0 144
NEVER						
M/F	0 344	-0.45	0 612	0 077	0.183	0.338
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
PUB/NPUB						
WEEKLY						
PUB/NPUB	-0.43	-1.16	-0 12	-0 74	-0.99	-0.64
LT WEEKLY						
PUB/NPUB	0 666		-0 48	-0 66	-0.57	-0.21
NEVER						
PUB/NPUB	0 130		0 010	1 245	0	0.197

* Stacistically significant difference

TABLE 9.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 11
"HOW OFTEN DO YOU LISTEN TO A MATHEMATICS LESSON EXPLAINED?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN LISTEN TO MATH LESSON EXPLAINED																		
DAILY	56	1.9	842	81	1.4	1175	57	1.6	1175	82	1.5	1175	68	1.5	1175	72	1.7	1175
WEEKLY	61	3.8	214	78	2.9	275	53	3.5	275	78	3.1	275	65	3.3	275	69	3.6	275
LESS THAN WEEKLY	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	57	1.6	1094	79	1.2	1505	55	1.5	1505	80	1.3	1505	66	1.4	1505	71	1.5	1505
LISTEN TO MATH LESSON EXPLAINED BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	59	2.2	589	84	1.6	822	61	2.0	822	84	1.7	822	72	1.8	822	75	2.0	822
BLACK	43	4.9	130	70	4.0	179	35	4.2	179	73	4.4	179	49	4.4	179	59	4.9	179
HISPANIC	44	5.6	91	68	5.1	125	42	5.4	125	74	5.1	125	50	5.1	125	61	5.7	125
WEEKLY																		
WHITE	64	4.3	158	80	3.3	205	56	4.1	205	81	3.5	205	68	3.7	205	71	4.1	205
BLACK	-	-	N<30	65	9.4	33	38	10.1	33	69	10.1	33	53	10.5	33	58	11.1	33
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LISTEN TO MATH LESSON EXPLAINED BY GENDER OF EXAMINEE																		
DAILY																		
MALE	58	2.7	407	82	1.9	563	63	2.3	563	82	2.1	563	70	2.2	563	75	2.4	563
FEMALE	55	2.7	435	79	2.0	612	51	2.3	612	81	2.0	612	66	2.2	612	70	2.4	612
WEEKLY																		
MALE	62	5.2	108	75	4.0	144	55	4.7	144	77	4.3	144	67	4.3	144	69	4.8	144
FEMALE	60	5.7	106	80	4.1	131	51	5.2	131	80	4.4	131	63	5.1	131	69	5.3	131
LESS THAN WEEKLY																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LISTEN TO MATH LESSON EXPLAINED BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	56	2.0	767	81	1.4	1075	56	1.7	1075	81	1.5	1075	67	1.6	1075	72	1.8	1075
NONPUBLIC	61	6.0	75	84	4.6	100	62	5.5	100	85	4.8	100	73	5.4	100	76	5.6	100
WEEKLY																		
PUBLIC	61	4.1	18.	78	3.0	240	53	3.7	240	78	3.3	240	64	3.6	240	69	3.8	240
NONPUBLIC	62	10.0	33	74	9.3	35	56	10.1	35	82	8.5	35	71	9.1	35	72	10.0	35
LESS THAN WEEKLY																		
PUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 9.1a: HOW OFTEN OO YOU LISTEN TO A MATH LESSON EXPLAINEO - GRAOE 11
Z TESTS FOR THE OIFF BETWEEN 2 MEANS

	FNOMNTL METHOOS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
LISTEN TO MATH LESSON EXPLAINEO COMPARISONS						
OAILY/NEVER	(NONE OF THESE TESTS SHOWEO SIGNIFICANT DIFFERENCES, BUT SINCE THE					
WEEKLY/NEVER	CELLS FOR THE "NEVER" CATEGORY CONTAIN LESS THAN 30 SUBJECTS,					
LT WEEKLY/NEVER	THE TESTS CAN NOT BE REPORTEO)					
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
OAILY						
WH/BL	3.027 *	3.077 *	5.502 *	2.350	4.935 *	3.154
WH/HISP	2.461 *	2.926 *	3.404 *	1.845	4.029 *	2.442
BL/HISP	-0.20	0.339	-0.89	-0.16	-0.25	-0.22
WEEKLY						
WH/BL		1 541	1.583	1.118	1.335	1.150
WH/HISP						
BL/HISP						
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENOER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
OAILY						
M/F	0 745	1.133	3.712 *	0.412	1.293	1.277
WEEKLY						
M/F	0.221	-0.84	0.625	-0.55	0.703	-0.04
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDEO BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
OAILY						
PUB/NPUB	-0.85	-0.71	-0 98	-0.65	-1.00	-0.69
WEEKLY						
PUB/NPUB	-0.14	0 398	-0.30	-0.44	-0.71	-0.27
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 9.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 7
"HOW OFTEN DO YOU LISTEN TO A MATHEMATICS LESSON EXPLAINED?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN LISTEN TO MATH LESSON EXPLAINED																		
DAILY	43	1.4	1906	60	1.7	957	56	1.4	1906	56	1.1	1902	47	1.5	1906	51	1.5	1906
WEEKLY	43	3.3	320	54	4.5	153	50	3.5	320	50	2.8	320	44	3.5	320	47	3.6	320
LESS THAN WEEKLY	37	9.4	33	45	14.9	14	47	10.6	33	52	8.6	33	40	10.7	33	44	10.9	33
NEVER	28	8.5	42	34	11.7	18	40	8.8	43	30	7.4	42	39	9.3	43	38	9.2	43
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	43	1.2	2325	58	1.6	1149	54	1.3	2326	55	1.0	2321	46	1.3	2326	50	1.3	2326
LISTEN TO MATH LESSON EXPLAINED BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	48	1.8	1109	64	2.2	561	60	1.9	1109	60	1.5	1107	51	1.9	1109	55	2.0	1109
BLACK	27	2.7	427	47	3.8	202	41	3.0	427	43	2.4	427	34	3.0	427	37	3.1	427
HISPANIC	32	3.3	297	53	4.2	155	45	3.6	297	47	3.0	295	37	3.6	297	41	3.7	297
WEEKLY																		
WHITE	49	4.5	180	59	5.9	91	54	4.6	180	56	3.6	180	48	4.7	180	51	4.8	180
BLACK	27	7.6	53	-	-	N<30	38	8.7	53	37	7.3	53	33	8.2	53	35	8.7	53
HISPANIC	28	6.4	70	-	-	N<30	41	7.4	70	31	5.3	70	36	7.4	70	36	7.5	70
LESS THAN WEEKLY																		
WHITE	38	12.6	17	39	20.6	6	50	14.9	17	53	12.0	17	41	15.1	17	46	15.4	17
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	33	12.0	23	32	14.4	10	49	11.9	24	31	9.0	23	45	12.5	24	44	12.3	24
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LISTEN TO MATH LESSON EXPLAINED BY GENDER OF EXAMINEE																		
DAILY																		
MALE	42	1.9	947	59	2.4	457	55	2.0	947	55	1.6	946	46	2.0	947	50	2.1	947
FEMALE	45	1.9	959	61	2.4	500	56	2.0	959	57	1.6	956	47	2.1	959	52	2.1	959
WEEKLY																		
MALE	40	4.3	171	54	5.9	84	49	4.7	171	51	3.9	171	42	4.7	171	46	4.8	171
FEMALE	46	4.9	149	55	6.9	69	52	5.1	149	49	3.9	149	47	5.1	149	49	5.3	149
LESS THAN WEEKLY																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
MALE	-	-	N<30	-	-	N<30	44	10.5	30	-	-	N<30	42	11.4	30	41	11.1	30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LISTEN TO MATH LESSON EXPLAINED BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	43	1.4	1756	59	1.7	880	55	1.5	1756	56	1.2	1752	47	.5	1756	51	1.5	1756
NONPUBLIC	45	5.1	149	66	6.2	76	60	5.1	149	62	4.1	149	50	5.7	149	55	5.4	149
WEEKLY																		
PUBLIC	42	3.4	301	53	4.6	144	49	3.6	301	50	2.9	301	43	3.6	301	46	3.7	301
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LESS THAN WEEKLY																		
PUBLIC	36	9.3	32	40	15.1	13	46	10.7	32	49	8.7	32	38	10.8	32	43	11.0	32
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	28	8.7	39	34	11.9	16	35	9.7	39	27	7.7	39	35	10.2	39	33	10.0	39
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS · 1985-86 MATHEMATICS ASSESSMENT

TABLE 9.2a: HOW OFTEN DO YOU LISTEN TO A MATH LESSON EXPLAINED - GRADE 7
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
LISTEN TO MATH LESSON EXPLAINED COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	1.740	2 149	1.708	3.520 *	0.803	1.359
WEEKLY/NEVER	1.556	1.559	1.016	2.597 *	0.491	0.900
LT WEEKLY/NEVER	0 656	0.573	0.471	1.969	0.056	0.435
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2 64 FOR 6 TESTS AT .05)						
DAILY						
WH/BL	6.620 *	3.659 *	5 572 *	6.023 *	4.633 *	5.147
WH/HISP	4 443 *	2.192	3.824 *	3 896 *	3.267 *	3.365
BL/HISP	-1.05	-1.04	-0.90	-0.98	-0.64	-0.94
WEEKLY						
WH/BL	2.485		1.567	2.365	1.609	1.603
WH/HISP	2 680 *		1.527	3.777 *	1.382	1.713
BL/HISP	-0.11		-0.18	0.565	-0 28	-0.05
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2 24 FOR 2 TESTS AT .05)						
DAILY						
M/F	-1 28	-0.44	-0.38	-1.04	-0.31	-0.64
WEEKLY						
M/F	-0 85	-0.08	-0.46	0.346	-0.67	-0.47
LESS THAN WEEKLY						
M/F						
NEVER						
M/F						
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
DAILY						
PUB/NPUB	-0 34	-1.03	-0 94	-1.53	-0.65	-0.73
WEEKLY						
PUB/NPUB						
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference.

TABLE 9.3: AVERAGE PERCENT CORRECT ON 1985-86 NASP MATHEMATICS SUBSCALES BY INSTRUCTIONAL ACTIVITIES: GRADE 3
"HOW OFTEN DO YOU LISTEN TO A MATHEMATICS LESSON EXPLAINED?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
HOW OFTEN LISTEN TO MATH LESSON EXPLAINED																		
DAILY	28	1.3	1792	56	1.8	874	34	1.4	1792	34	1.0	1792	44	1.4	1792	37	1.5	1792
WEEKLY	32	3.1	359	58	3.6	190	37	3.3	359	34	2.4	359	47	3.1	359	39	3.4	359
LESS THAN WEEKLY	23	9.0	36	-	-	N<30	30	10.1	36	23	7.3	36	39	9.8	36	31	10.3	36
NEVER	22	5.4	88	36	7.2	52	30	5.9	88	30	4.7	88	34	5.4	88	30	6.1	88
NOT REPORTED	9	4.1	69	26	7.8	33	9	4.4	69	14	4.4	69	14	4.3	69	12	4.8	69
TOTAL W/IN SUBSCALE	28	1.1	2344	55	1.5	1165	34	1.3	2344	33	0.9	2344	43	1.2	2344	36	1.3	2344
LISTEN TO MATH LESSON EXPLAINED BY RACE/ETHNICITY OF EXAMINEE *																		
DAILY																		
WHITE	30	1.7	1112	61	2.3	554	37	1.9	1112	36	1.3	1112	47	1.8	1112	40	1.9	[illegible]
BLACK	19	2.6	360	40	4.0	178	27	3.0	360	26	2.3	360	37	3.1	360	29	3.2	[illegible]
HISPANIC	22	3.3	256	43	4.9	116	28	3.6	256	29	2.7	256	37	3.7	256	30	3.8	256
WEEKLY																		
WHITE	35	3.9	236	62	4.4	129	40	4.2	236	37	3.0	236	49	3.9	236	42	4.2	236
BLACK	19	7.4	47	-	-	N<30	23	8.0	47	15	4.9	47	40	8.7	47	26	8.6	47
HISPANIC	22	6.5	61	36	8.5	[illegible]	29	7.5	61	35	5.9	61	39	7.3	61	32	7.8	61
LESS THAN WEEKLY																		
WHITE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
WHITE	29	9.3	38	-	-	N<30	41	9.5	38	39	6.4	38	45	[illegible]	38	39	9.8	38
BLACK		-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
LISTEN TO MATH LESSON EXPLAINED BY GENDER OF EXAMINEE																		
DAILY																		
MALE	29	1.9	831	57	2.6	421	35	2.1	881	33	1.5	881	44	2.0	881	37	2.1	881
FEMALE	26	1.8	911	55	2.6	453	34	2.0	911	34	1.5	911	44	1.9	911	36	2.1	911
WEEKLY																		
MALE	32	4.0	212	57	4.5	116	38	4.3	212	36	3.0	212	47	4.1	212	40	4.4	212
FEMALE	31	4.7	147	59	5.8	74	36	5.1	147	32	3.9	147	46	4.8	147	39	5.2	147
LESS THAN WEEKLY																		
MALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
FEMALE	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
MALE	26	7.8	46	-	-	N<30	28	8.1	46	32	6.4	46	32	7.7	[illegible]	30	8.5	46
FEMALE	19	7.7	42	-	-	N<30	32	8.5	42	29	6.9	42	35	7.7	42	29	8.8	42
LISTEN TO MATH LESSON EXPLAINED BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
DAILY																		
PUBLIC	28	1.3	1629	56	1.9	788	34	1.5	1629	33	1.1	1629	44	1.5	1629	37	1.5	1629
NONPUBLIC	26	4.3	160	61	5.6	85	36	4.9	160	38	3.6	160	48	4.7	160	39	5.1	160
WEEKLY																		
PUBLIC	31	3.2	325	59	3.7	173	37	3.3	325	36	2.5	325	46	3.3	325	39	3.5	325
NONPUBLIC	37	10.2	34	-	-	N<30	39	10.5	34	23	7.2	34	51	9.6	34	41	10.8	34
LESS THAN WEEKLY																		
PUBLIC	24	9.6	33	-	-	N<30	30	10.5	33	24	7.6	33	42	10.5	33	32	10.9	33
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NEVER																		
PUBLIC	21	5.5	84	36	7.3	50	29	6.0	84	29	4.9	84	32	5.6	84	29	6.2	84
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 9.3a: HOW OFTEN DO YOU LISTEN TO A MATH LESSON EXPLAINED - GRADE 3
Z TESTS FOR THE DIFF BETWEEN 2 MEANS

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
LISTEN TO MATH LESSON EXPLAINED COMPARISONS (Z=2.4 FOR 3 TESTS AT .05)						
DAILY/NEVER	0.982	2.694 *	0.744	0.772	1.868	1.116
WEEKLY/NEVER	1 584	2.728 *	1.069	0.799	2.019	1.379
LT WEEKLY/NEVER	0.037		0.034	-0.77	0.490	0 383
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2 64 FOR 6 TESTS AT .05)						
DAILY						
WH/C_	3.564 *	4.525 *	2.754 *	3.634 *	2.741 *	2.929
WH/HISP	2.203	3 448 *	2.223	2.101	2.535	2.320
BL/HISP	-0 69	-0.34	-0.14	-0.89	0.104	-0.20
WEEKLY						
WH/BL	1 944		1.902	3.845 *	0.878	1.677
WH/HISP	1.707	2 766 *	1 259	0.300	1.133	1.209
BL/HISP	-0 32		-0.58	-2.61	0.087	-0.46
LESS THAN WEEKLY						
WH/BL						
WH/HISP						
BL/HISP						
NEVER						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
DAILY						
M/F	1 318	0.466	0 484	-0.38	-0.10	0.270
WEEKLY						
M/F	0 161	-0 21	0.208	0 690	0.094	0.161
LESS THAN WEEKLY						
M/F						
NEVER						
M/F	0 567		-0 35	0.385	-0 28	0.081
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
DAILY						
PUB/NPUB	0 462	-0 83	-0.32	-1 30	-0 89	-0 45
WEEKLY						
PUB/NPUB	-0 55		-0.20	1.658	-0 43	-0.12
LT WEEKLY						
PUB/NPUB						
NEVER						
PUB/NPUB						

* Statistically significant difference

TABLE 10.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER STUDY MATH THROUGH COMPUTER INSTRUCTION?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER STUDY MATH THROUGH COMPUTER INSTRUCTION?																		
YES	66	2.5	430	77	2.0	430	47	2.6	430	66	2.7	430	66	2.6	430	64	2.9	430
NO	64	1.5	1341	79	1.2	1339	46	1.5	1341	65	1.6	1341	63	1.5	1341	62	1.7	1341
NOT REPORTED	45	8.0	36	50	7.1	36	30	8.6	36	45	9.1	36	41	9.1	36	42	9.7	36
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
STUDY MATH THROUGH COMPUTER INSTRUCTION BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	71	2.9	288	80	2.4	288	53	3.2	288	71	3.2	288	72	3.1	288	69	3.4	288
BLACK	54	6.7	82	66	5.1	82	23	5.8	82	52	6.9	82	48	6.7	82	48	7.2	82
HISPANIC	44	8.7	41	70	6.4	41	24	7.5	41	46	9.7	41	45	9.6	41	44	10.1	41
NO																		
WHITE	67	1.7	961	82	1.3	959	50	1.8	961	68	1.8	961	66	1.8	961	66	1.9	961
BLACK	52	3.8	206	69	3.4	206	25	3.6	206	53	4.3	206	44	4.2	206	47	4.5	206
HISPANIC	50	5.0	131	65	4.2	131	31	4.5	131	50	5.2	131	50	5.1	131	49	5.5	131
STUDY MATH THROUGH COMPUTER INSTRUCTION BY SEX OF EXAMINEE *																		
YES																		
MALE	67	3.2	249	77	2.5	249	48	3.4	249	65	3.6	249	66	3.4	249	64	3.7	249
FEMALE	65	4.1	181	77	3.4	181	45	3.9	181	68	4.2	181	66	4.1	181	64	4.5	181
NO																		
MALE	65	2.1	657	78	1.7	656	48	2.1	657	65	2.2	657	66	2.1	657	64	2.3	657
FEMALE	63	2.1	684	80	1.6	683	43	2.1	684	66	2.2	684	59	2.2	684	61	2.4	684
STUDY MATH THROUGH COMPUTER INSTRUCTION BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	65	2.7	379	75	2.2	379	47	2.7	379	65	2.9	379	65	2.8	379	63	3.0	379
NONPUBLIC	72	6.8	51	86	5.2	51	46	7.7	51	73	7.8	51	70	7.4	51	69	8.4	51
NO																		
PUBLIC	63	1.6	1218	79	1.2	1216	44	1.6	1218	64	1.7	1218	62	1.6	1218	61	1.8	1218
NONPUBLIC	74	4.4	123	79	4.1	123	60	5.1	123	73	4.9	123	69	4.6	123	70	5.3	123

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE. NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 10.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
STUDY MATH THROUGH COMPUTER INSTRUCTION - COMPARISONS						
YES/NO	0.652	-0.81	0.370	0.319	1.056	0.422
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 ESTS AT .05)						
YES						
WH/BL	2.3c4	2.425	4.657 *	2.526	3.245 *	2.667
WH/HISP	2.943 *	1.439	3.664 *	2.458	2.658 *	2.398
BL/HISP	0.908	-0.47	-0.08	0.498	0.256	0.347
NO						
WH/BL	3.467 *	3.457 *	6.115 *	3.313 *	5.022 *	3.795
WH/HISP	3.272 *	3.831 *	3.938 *	3.332 *	3.118 *	2.943
BL/HISP	0.414	0.832	-1.03	0.385	-0.91	-0.22
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	0.290	0.023	0.697	-0.45	0.093	-0.01
NO						
M/F	0.849	-0.81	1.960	-0.22	2.177	0.720
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.91	-1.88	0.036	-0.87	-0.60	-0.63
NO						
PUB/NPUB	-2.24 *	0.046	-2.99 *	-1.59	-1.36	-1.60

* Statistically significant difference.

TABLE 10 2· AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER STUDY MATH THROUGH COMPUTER INSTRUCTION?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER STUDY MATH THROUGH COMPUTER INSTRUCTION?																		
YES	53	2.2	814	70	1.9	814	53	2.2	814	66	2.1	814	42	2.1	814	58	2.3	814
NO	54	1.7	1346	69	1.5	1346	50	1.7	1346	65	1.7	1346	39	1.6	1346	56	1.8	1346
NOT REPORTED	41	6 4	87	56	5.9	87	44	6.6	87	56	6.3	87	37	6.2	87	48	6.8	87
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
STUDY MATH THROUGH COMPUTER INSTRUCTION BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	55	2 9	462	75	2.4	462	58	2.9	462	69	2.8	462	46	2.8	462	61	3.0	462
BLACK	47	4.7	186	59	4 4	186	38	4.6	186	58	4.7	186	29	4.1	186	47	4.9	186
HISPANIC	47	5 5	126	60	5.0	126	44	5.6	126	63	5.5	126	34	5.1	126	51	5.8	126
NO																		
WHITE	57	2.2	304	73	1.9	804	55	2.2	804	68	2.1	804	43	2.1	804	59	2.3	804
BLACK	46	3.9	262	58	3.7	262	35	3 8	262	56	4.0	262	27	3.5	262	44	4.1	262
HISPANIC	43	4.1	233	58	3.9	233	40	4.1	233	55	4.3	233	28	3.7	233	46	4.3	233
STUDY MATH THROUGH COMPUTER INSTRUCTION BY SEX OF EXAMINEE *																		
YES																		
MALE	51	3 0	436	69	2.5	436	52	3.0	436	64	2.9	436	43	2.9	436	56	3.1	436
FEMALE	56	3.3	378	72	2.8	378	54	3.2	378	69	3.1	378	41	3.1	378	59	3.3	378
NO																		
MALE	54	2.5	631	71	2.1	631	54	2.5	631	65	2.4	631	40	2.3	631	57	2.6	631
FEMALE	53	2 4	715	68	2.1	715	47	2.4	715	65	2.3	715	37	2.2	715	54	2.5	715
STUDY MATH THROUGH COMPUTER INSTRUCTION BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	53	2.3	758	70	2.0	758	52	2.3	758	66	2.2	758	41	2.2	758	57	2.4	758
NONPUBLIC	53	8.7	55	78	6.8	55	64	7.8	55	73	7 7	55	53	8.3	55	65	8 4	55
NO																		
PUBLIC	53	1 8	1235	68	1 6	1235	50	1.8	1235	64	1.8	1235	38	1.7	1235	55	1.9	1235
NONPUBLIC	57	6 1	110	77	5.1	110	56	6 1	110	72	5.6	110	45	5.7	110	62	6.2	110

* Small subcategories were not included, so sample sizes may not match totals See technical notes for discussion.

SOURCE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 10.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

STUDY MATH THROUGH COMPUTER INSTRUCTION - COMPARISONS	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
YES/NO	-0.21	0.543	1.047	0.[illegible]9	1.282	0.661

COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	1.579	3.149 *	3.727 *	2.059	3.227 *	2.502
WH/HISP	1.265	2.789 *	2.242	0.889	1.926	1.485
BL/HISP	-0.11	-0.04	-0.84	-0.79	-0.74	-0.60
NO						
WH/BL	2.508	3.672 *	4.677 *	2.626	3.757 *	3.197
WH/HISP	3.033 *	3.468 *	3.223 *	2.600	3.417 *	2.820
BL/HISP	0.517	-0.07	-1.00	0.068	-0.13	-0.20

COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	-1.10	-0.79	-0.41	-1.17	0.403	-0.68
NO						
M/F	0.405	0.941	1.790	0.148	0.833	0.703

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
PUB/NPUB	0.011	-1.21	-1.38	-0.96	-1.40	-0.93
NO						
PUB/NPUB	-0.61	-1.56	-1.04	-1.39	-1.21	-1.15

* Statistically significant difference

TABLE 11 1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER USE A COMPUTER TO SOLVE A MATH PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO SOLVE A MATH PROBLEM?																		
YES	67	1.7	945	79	1.4	944	50	1.8	945	69	1.8	945	67	1.8	945	66	1.9	945
NO	62	1.9	838	76	1.5	837	41	1.9	838	61	2.0	838	59	2.0	838	59	2.2	838
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
USE A COMPUTER TO SOLVE A MATH PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	70	2.0	655	83	1.6	654	55	2.2	655	72	2.1	655	71	2.1	655	70	2.3	655
BLACK	55	4.4	170	68	3.6	170	27	4.0	170	54	4.7	170	47	4.6	170	49	4.9	170
HISPANIC	56	6.4	78	74	5.0	78	36	6.0	78	58	6.6	78	53	6.7	78	54	7.0	78
NO																		
WHITE	65	2.2	600	80	1.7	599	45	2.3	600	65	2.4	600	63	2.3	600	63	2.5	600
BLACK	51	5.1	123	69	4.5	123	21	4.7	123	51	5.7	123	43	5.4	123	46	5.9	123
HISPANIC	42	5.8	95	59	5.0	95	23	5.0	95	41	6.2	95	43	6.0	95	41	6.5	95
USE A COMPUTER TO SOLVE A MATH PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	68	2.2	535	79	1.8	535	52	2.3	535	69	2.4	535	70	2.3	535	67	2.5	535
FEMALE	65	2.7	410	80	2.1	409	46	2.7	410	69	2.8	410	63	2.7	410	64	3.0	410
NO																		
MALE	62	2.8	381	76	2.2	380	43	2.8	381	59	3.0	381	60	2.9	381	58	3.2	381
FEMALE	61	2.6	457	77	2.1	457	39	2.6	457	63	2.7	457	58	2.7	457	59	2.9	457
USE A COMPUTER TO SOLVE A MATH PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	66	1.8	843	79	1.4	842	49	1.9	843	68	1.9	843	66	1.9	843	65	2.0	843
NONPUBLIC	73	4.9	102	84	4.0	102	57	5.4	102	77	5.3	102	75	5.1	102	73	5.7	102
NO																		
PUBLIC	60	2.0	765	76	1.6	764	39	2.0	765	60	2.1	765	58	2.1	765	56	2.3	765
NONPUBLIC	74	5.8	73	78	5.4	73	56	6.7	73	68	6.6	73	62	6.0	73	66	7.1	73

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 11.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO SOLVE A MATH PROBLEM - COMPARISONS						
YES/NO	2.126 *	1.577	3.400 *	2.875 *	3.120 *	2.531
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	3.189 *	3.783 *	6.209 *	3.544 *	4.808 *	3.833
WH/HISP	2.169	1.616	2.911 *	2.079	2.558	2.086
BL/HISP	-0.09	-1.04	-1.36	-0.48	-0.77	-0.62
NO						
WH/BL	2.618	2.215	4.581 *	2.193	3.462 *	2.625
WH/HISP	3.738 *	3.922 *	4.097 *	3.547 *	3.033 *	3.054
BL/HISP	1.127	1.497	-0.17	1.198	-0.08	0.509
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	0.833	-0.39	1.612	0.246	1.764	0.820
NO						
M/F	0 318	-0.29	0.875	-1.08	0.689	-0.13
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-1.21	-1.10	-1.34	-1.53	-1.60	-1.30
NO						
PUB/NPUB	-2.21	-0.33	-2.38 *	-1.09	-0.64	-1.18

* Statistically significant difference.

TABLE 11.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER USE A COMPUTER TO SOLVE A MATH PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO SOLVE A MATH PROBLEM?																		
YES	54	1.7	1388	72	1.4	1388	53	1.7	1388	67	1.6	1388	42	1.6	1388	58	1.7	1388
NO	52	2.3	779	67	2.0	779	49	2.3	779	63	2.2	779	37	2.1	779	54	2.4	779
NOT REPORTED	36	6.7	80	45	6.5	80	35	6.6	80	48	6.9	80	24	6.1	80	39	7.1	80
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
USE A COMPUTER TO SOLVE A MATH PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	57	2.2	851	76	1.7	851	58	2.1	851	70	2.0	851	46	2.1	851	62	2.2	851
BLACK	47	3.8	276	59	3.6	276	37	3.8	276	57	3.9	276	29	3.4	276	46	4.0	276
HISPANIC	46	4.4	201	59	4.1	201	42	4.3	201	60	4.5	201	32	4 0	201	49	4.6	201
NO																		
WHITE	56	3 1	425	70	2.6	425	54	3.1	425	66	3.0	425	40	2.9	425	57	3.2	425
BLACK	45	4.7	172	58	4.6	172	35	4.6	172	56	5.0	172	28	4.3	172	45	5.1	172
HISPANIC	43	5.0	152	58	4 7	152	41	5.1	152	57	5.3	152	28	4.6	152	46	5.4	152
USE A COMPUTER TO SOLVE A MATH PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	54	2.?	721	72	2.0	721	54	2.3	721	66	2.2	721	43	2.2	721	58	2.4	721
FEMALE	54	2.5	667	72	2.1	667	52	2 4	667	68	2.3	667	41	2.3	667	58	2.5	667
NO																		
MALE	50	3.4	341	67	2.9	341	51	3.4	341	62	3.4	341	37	3.2	341	54	3.5	341
FEMALE	54	3 1	438	66	2.8	438	47	3.0	438	64	3.0	438	36	2.8	438	54	3.2	438
USE A COMPUTER TO SOLVE A MATH PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	54	1 8	1282	71	1 5	1282	53	1.7	1282	66	1.7	1282	41	1.7	1282	58	1.3	1282
NONPUBLIC	57	6.3	104	79	5 0	104	62	6.0	104	74	5.6	104	52	5.9	104	66	6.1	104
NO																		
PUBLIC	52	2 4	719	66	2.1	719	49	2.3	719	63	2.3	719	36	2.2	719	54	2.5	719
NONPUBLIC	52	8.3	60	72	7.2	60	51	8.2	60	66	7.9	60	38	7.9	60	56	8 5	60

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS 1985-86 MATHEMATICS ASSESSMENT

TABLE 11.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO SOLVE A MATH PROBLEM - COMPARISONS						
YES/NO	0.741	2.113 *	1.531	1.334	2.177	1.470

COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	2.301	4.380 *	4.834 *	3.025 *	4.280 *	3.506
WH/HISP	2.252	3.823 *	3.288 *	2.084	3.067 *	2.535
BL/HISP	0.154	-0.10	-0.87	-0.52	-0.62	-0.50
NO						
WH/BL	1.946	2.270	3.391 *	1.705	2.475	2.144
WH/HISP	2.142	2.177	2.087	1.545	2.343	1.784
BL/HISP	0.245	-0.03	-0.92	-0.06	0	-0.21

COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	0.029	0	0.748	-0.49	0.683	0.115
NO						
M/F	-0.85	0.174	0.791	-0.33	0.093	-0.02

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
PUB/NPUB	-0.41	-1.42	-1.49	-1.42	-1.70	-1.28
NO						
PUB/NPUB	-0.02	-0.80	-0.30	-0.43	-0.21	-0.31

* Statistically significant difference.

TABLE 12.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER USE A COMPUTER TO PLAY A GAME?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO PLAY A GAME?																		
YES	65	1.3	1653	79	1.0	1651	47	1.4	1653	67	1.4	1653	65	1.4	1653	64	1.5	1653
NO	52	5.0	133	70	3.8	133	28	4.3	133	52	5.1	133	46	5.0	133	48	5.5	133
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
USE A COMPUTER TO PLAY A GAME BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	69	1.5	1189	81	1.2	1187	52	1.6	1189	70	1.6	1189	68	1.6	1189	67	1.7	1189
BLACK	54	3.5	264	69	2.9	264	25	3.2	264	54	3.8	264	47	3.7	264	49	4.0	264
HISPANIC	48	4.7	144	68	3.8	144	29	4.2	144	51	5.0	144	50	5.0	144	49	5.3	144
NO																		
WHITE	56	6.9	71	79	4.8	71	31	6.0	71	57	6.9	71	52	6.8	71	54	7.5	71
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
USE A COMPUTER TO PLAY A GAME BY SEX OF EXAMINEE *																		
YES																		
MALE	67	1.8	847	78	1.4	845	50	1.9	847	66	1.9	847	67	1.8	847	65	2.0	847
FEMALE	64	1.9	806	79	1.5	805	44	2.0	806	67	2.0	806	62	2.0	806	62	2.2	806
NO																		
MALE	53	7.0	68	69	5.5	68	31	6.4	68	51	6.9	68	47	7.1	68	48	7.6	68
FEMALE	51	7.0	65	71	5.2	65	25	5.8	65	53	7.5	65	44	6.9	65	48	7.9	65
USE A COMPUTER TO PLAY A GAME BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	65	1.4	1489	78	1.1	1487	46	1.4	1489	66	1.5	1489	64	1.4	1489	63	1.6	1489
NONPUBLIC	72	3.9	164	81	3.5	164	57	4.4	164	73	4.3	164	70	4.0	164	70	4.6	164
NO																		
PUBLIC	48	5.4	121	69	4.1	121	25	4.5	121	50	5.3	121	44	5.2	121	46	5.8	121
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 12.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO PLAY A GAME - COMPARISONS						
YES/NO	2.554 *	2.294 *	4.242 *	2.798 *	3.675 *	2.751
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.4 FOR 3 TESTS AT .05)						
YES						
WH/BL	3.820 *	3.975 *	7.234 *	3.728 *	5.305 *	4.199
WH/HISP	4.078 *	3.289 *	4.881 *	3.619 *	3.484 *	3.343
BL/HISP	0.985	0.145	-0.74	0.569	-0.51	0.045
NO						
WH/BL						
WH/HISP						
BL/HISP						
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	1.069	-0.28	2.031	-0.14	2.102	0.840
NO						
M/F	0.232	-0.26	0.687	-0.26	0.212	-0.01
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
YES						
PUB/NPUB	-1.77	-0.74	-2.41 *	-1.62	-1.34	-1.50
NO						
PUB/NPUB						

* Statistical significant difference.

TABLE 12.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER USE A COMPUTER TO PLAY A GAME?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO PLAY A GAME?																		
YES	54	1.4	2023	71	1.2	2023	53	1.4	2023	66	1.4	2023	41	1.3	2023	57	1.4	2023
NO	47	5.0	153	58	4.7	153	43	5.0	153	58	5.2	153	31	4.6	153	48	5.3	153
NOT REPORTED	39	7.1	71	44	6.9	71	30	7.0	71	41	7.3	71	24	6.7	71	35	7.5	71
TOTAL WITHIN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
USE A COMPUTER TO PLAY A GAME BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	56	1.8	1212	75	1.5	1212	57	1.8	1212	69	1.7	1212	45	1.7	1212	61	1.8	1212
BLACK	47	3.1	408	59	3.0	408	37	3.1	408	57	3.2	408	29	2.8	408	46	3.3	408
HISPANIC	46	3.5	319	60	3.2	319	43	3.5	319	59	3.6	319	32	3.2	319	49	3.7	319
NO																		
WHITE	55	7.7	70	65	6.6	70	48	7.5	70	63	7.5	70	37	7.1	70	54	7.9	70
BLACK	37	9.7	36	45	10.5	36	27	9.7	36	46	10.7	36	19	8.5	36	35	10.6	36
HISPANIC	32	8.7	42	45	9.6	42	34	9.5	42	52	10.2	42	20	8.2	42	39	10.2	42
USE A COMPUTER TO PLAY A GAME BY SEX OF EXAMINEE *																		
YES																		
MALE	54	2.0	999	71	1.7	999	54	2.0	999	65	1.9	999	42	1.9	999	58	2.0	999
FEMALE	54	2.0	1024	70	1.7	1024	51	2.0	1024	67	1.9	1024	40	1.9	1024	57	2.0	1024
NO																		
MALE	44	7.2	71	56	6.5	71	43	7.2	71	56	7.5	71	29	6.4	71	47	7.6	71
FEMALE	50	6.9	82	61	6.8	82	42	7.1	82	60	7.1	82	33	6.6	82	49	7.4	82
USE A COMPUTER TO PLAY A GAME BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	54	1.5	1866	70	1.2	1866	52	1.4	1866	66	1.4	1866	40	1.4	1866	57	1.5	1866
NONPUBLIC	56	5.1	156	76	4.2	156	59	4.9	156	72	4.7	156	48	4.9	156	63	5.1	156
NO																		
PUBLIC	47	5.2	143	57	4.9	143	41	5.2	143	57	5.4	143	31	4.8	143	47	5.5	143
NONPUBLIC	-	-	N<	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 12.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO PLAY A GAME - COMPARISONS						
YES/NO	1.309	2.551 *	1.872	1.478	2.015 *	1.655
COMAPRISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	2.710 *	4.508 *	5.701 *	3.206 *	4.713 *	3.836
WH/HISP	2.715 *	4.074 *	3.724 *	2.450	3.516 *	2.890
BL/HISP	0.192	-0.13	-1.22	-0.41	-0.63	-0.52
NO						
WH BL	1.433	1.671	1.737	1.327	1.627	1.447
WH/HISP	1.977	1.761	1.196	0.882	1.578	1.190
BL/HISP	0.399	-0.01	-0.50	-0.41	-0.07	-0.25
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.17	0.418	1.116	-0.58	0.865	0.173
NO						
M/F	-0.55	-0.56	0.128	-0.34	-0.42	-0.22
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
YES						
PUB/NPUB	-0.37	-1.36	-1.28	-1.26	-1.60	-1.14
NO						
PUB/NPUB						

* Statistically significant difference.

TABLE 13.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM?																		
YES	71	2.7	329	81	2.2	329	51	3.0	329	71	2.9	329	72	2.8	329	69	3.1	329
NO	63	1.5	1391	77	1.2	1389	44	1.5	1391	64	1.6	1391	61	1.5	1391	61	1.7	1391
NOT REPORTED	58	5.9	87	72	4.7	87	50	5.8	87	60	5.8	87	61	5.7	87	59	6.2	87
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	75	3.1	229	85	2.4	229	57	3.6	229	74	3.4	229	77	3.3	229	73	3.6	229
BLACK	60	7.5	53	72	6.7	53	33	7.4	53	59	8.3	53	51	8.3	53	54	8.8	53
HISPANIC	57	9.2	32	62	7.4	32	36	9.3	32	53	10.1	32	50	10.4	32	50	10.7	32
NO																		
WHITE	66	1.7	977	80	1.3	975	48	1.8	977	68	1.8	977	65	1.8	977	65	1.9	977
BLACK	51	3.8	231	68	3.1	231	23	3.4	231	52	4.1	231	44	3.9	231	47	4.3	231
HISPANIC	47	4.9	137	67	4.0	137	27	4.3	137	48	5.2	137	48	5.0	137	47	5.5	137
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	71	3.5	188	81	2.7	188	52	3.8	188	70	3.8	188	73	3.7	188	69	4.1	188
FEMALE	70	4.4	141	80	3.6	141	50	4.6	141	72	4.5	141	70	4.4	141	69	4.9	141
NO																		
MALE	64	2.0	694	76	1.6	693	47	2.1	694	63	2.2	694	64	2.1	694	62	2.3	694
FEMALE	62	2.1	697	78	1.7	696	41	2.1	697	65	2.2	697	58	2.2	697	60	2.4	697
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	71	2.9	293	79	2.3	293	50	3.1	293	70	3.1	293	71	3.0	293	68	3.3	293
NONPUBLIC	70	7.8	36	90	5.4	36	60	9.0	36	77	8.5	36	79	8.3	36	75	9.1	36
NO																		
PUBLIC	62	1.5	1258	77	1.2	1256	42	1.5	1258	63	1.6	1258	60	1.6	1258	60	1.7	1258
NONPUBLIC	74	4.3	133	78	4.0	133	54	4.9	133	71	4.8	133	66	4.6	133	68	5.2	133

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 13.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM - COMPARISONS						
YES/NO	2.452 *	1.384	2.273 *	2.084 *	3.434 *	2.203

COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	1.869	1.707	2.832 *	1.724	2.858 *	2.009
WH/HISP	1.825	2.855 *	2.023	1.978	2.463	2.011
BL/HISP	0.218	1.023	-0.26	0.427	0.090	0.252
NO						
WH/BL	3.605 *	3.575 *	6.652 *	3.375 *	4.840 *	3.846
WH/HISP	3.823 *	3.083 *	4.610 *	3.549 *	3.214 *	3.108
BL/HISP	0.794	0.176	-0.72	0.636	-0.57	-0.01

COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	0.231	0.222	0.249	-0.30	0.452	0.062
NO						
M/F	0.861	-0.77	1.905	-0.51	1.723	0.484

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
PUB/NPUB	0.095	-1.74	-1.01	-0.69	-0.92	-0.76
NO						
PUB/NPUB	-2.64 *	-0.31	-2.33 *	-1.56	-1.07	-1.43

* Statistically significant difference.

TABLE 13.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM?																		
YES	53	3.6	297	65	3.2	297	50	3.6	297	64	3.5	297	38	3.3	297	55	3.7	297
NO	53	1.6	1598	70	1.4	1598	51	1.6	1598	65	1.5	1598	40	1.5	1598	56	1.6	1598
NOT REPORTED	50	3.3	352	68	2.8	352	50	3.3	352	64	3.2	352	40	3.2	352	55	3.4	352
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	58	5 2	144	72	4.4	144	58	5.2	144	70	4.9	144	44	4.9	144	61	5.3	144
BLACK	44	7.1	77	54	6.6	77	37	6.9	77	52	7.5	77	25	6.4	77	43	7.5	77
HISPANIC	42	7.5	63	50	7.8	63	35	7.6	63	54	8.2	63	26	6.9	63	43	8.2	63
NO																		
WHITE	57	2.1	945	74	1.7	945	56	2.0	945	68	2.0	945	44	2.0	945	60	2.1	945
BLACK	46	3.5	323	57	3.4	323	35	3.5	323	57	3.6	323	28	3.2	323	45	3.7	323
HISPANIC	45	3.8	269	61	3.5	269	44	3.8	269	59	3.9	269	32	3.5	269	49	4.0	269
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	53	4.5	190	66	3.9	190	52	4.5	190	64	4.4	190	40	4.2	190	56	4.6	190
FEMALE	53	6.1	107	64	5.7	107	47	6.1	107	65	5.9	107	34	5.6	107	54	6.4	107
NO																		
MALE	53	2.3	751	71	1.9	751	54	2.3	751	65	2.2	751	41	2.2	751	57	2.4	751
FEMALE	53	2.2	847	69	1.9	847	50	2.2	847	66	2.1	847	39	2.1	847	56	2.3	847
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	52	3.8	270	65	3.4	270	48	3.8	270	63	3.8	270	36	3 5	270	53	4.0	270
NONPUL C	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NO																		
PUBLIC	54	1 7	1477	70	1.4	1477	51	1.6	1477	65	1.6	1477	39	1.6	1477	56	1.7	1477
NONPUBLIC	56	5 9	119	77	4.9	119	57	5.7	119	70	5.5	119	46	5.7	119	62	5 9	119

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE. NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 13.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO SOLVE A LINEAR PROGRAMMING PROBLEM - COMPARISONS						
YES/NO	-0.10	-1.28	-0.28	-0.20	-0.43	-0.34

COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	1.654	2.319	2.363	2.066	2.394	2.027
WH/HISP	1.777	2.494	2.476	1.680	2.116	1.875
BL/HISP	0.164	0.383	0.223	-0.22	-0.15	-0.01
NO						
WH/BL	2.480	4.347 *	5.206 *	2.668 *	4.135 *	3.442
WH/HISP	2.77; *	3.278 *	2.887 *	2.088	2.941 *	2.451
BL/HISP	0.367	-0.77	-1.63	-0.35	-0.73	-0.65

COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	-0.05	0.275	0.756	-0.17	0.856	0.229
NO						
M/F	-0.03	0.514	1.276	-0.25	0.967	0.368

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)

YES						
PUB/NPUB						
NO						
PUB/NPUB	-0.32	-1.37	-0.93	-0.94	-1.14	-0.89

* Statistically significant difference.

TABLE 14.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES; GRADE 11
"DID YOU EVER USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS?																		
YES	69	2.0	625	81	1.6	624	51	2.1	625	70	2.2	625	69	2.1	625	67	2.3	625
NO	62	1.6	1120	76	1.3	1119	42	1.7	1120	63	1.7	1120	60	1.7	1120	60	1.8	1120
NOT REPORTED	47	7.4	62	71	5.3	62	39	6.6	62	53	7.2	62	56	7.0	62	53	7.6	62
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	71	2.3	461	84	1.8	460	55	2.5	461	72	2.5	461	71	2.4	461	70	2.7	461
BLACK	58	5.9	90	68	5.2	90	28	5.4	90	58	6.6	90	51	6.4	90	52	6.9	90
HISPANIC	59	7.5	51	72	5.8	51	31	7.0	51	56	8.2	51	53	8.3	51	53	8.8	51
NO																		
WHITE	67	1.9	765	79	1.5	764	48	2.0	765	67	2.1	765	65	2.0	765	64	2.2	765
BLACK	51	4.0	201	69	3.3	201	23	3.7	201	51	4.4	201	43	4.2	201	46	4.6	201
HISPANIC	43	5.4	115	63	4.5	115	27	4.8	115	46	5.6	115	45	5.5	115	44	5.9	115
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS BY SEX OF EXAMINEE *																		
YES																		
MALE	71	2.6	342	82	2.0	342	55	2.8	342	71	2.9	342	72	2.8	342	70	3.1	342
FEMALE	66	3.2	283	79	2.6	282	47	3.2	283	69	3.3	283	64	3.3	283	65	3.6	283
NO																		
MALE	63	2.3	555	75	1.9	554	44	2.3	555	62	2.5	555	62	2.4	555	60	2.6	555
FEMALE	62	2.3	565	77	1.9	565	41	2.3	565	64	2.5	565	58	2.4	565	60	2.6	565
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	68	2.2	561	80	1.7	560	49	2.2	561	69	2.3	561	67	2.3	561	66	2.5	561
NONPUBLIC	73	5.5	64	85	5.1	64	65	6.9	64	77	6.4	64	77	6.4	64	75	7.0	64
NO																		
PUBLIC	61	1.7	1011	76	1.4	1010	41	1.7	1011	62	1.8	1011	60	1.8	1011	59	1.9	1011
NONPUBLIC	73	4.9	109	78	4.4	109	51	5.5	109	71	5.3	109	64	5.0	109	67	5.8	109

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS 1985-86 MATHEMATICS ASSESSMENT

TABLE 14.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS - COMPARISONS						
YES/NO	2.494 *	2.302 *	3.262 *	2.573 *	3.093 *	2.484
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	2.030	2.962 *	4.479 *	2.042	2.981 *	2.369
WH/HISP	1.427	1.949	3.185 *	1.872	2.089	1.814
BL/HISP	-0.17	-0.58	-0.37	0.152	-0.22	-0.07
NO						
WH/BL	3.453 *	2.839 *	5.852 *	3.305 *	4.722 *	3.665
WH/HISP	4.129 *	3.431 *	3.901 *	3.561 *	3.288 *	3.146
BL/HISP	1.210	1.056	-0.70	0.744	-0.40	0.160
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	1.330	0.848	1.864	0.453	1.877	1.058
NO						
M/F	0.368	-0.94	0.724	-0.80	1.009	-0.02
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.72	-0.93	-2.11	-1.09	-1.45	-1.17
NO						
PUB/NPUB	-2.29 *	-0.34	-1.73	-1.55	-0.78	-1.29

* Statistically significant difference.

TABLE 14.2· AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS?																		
YES	56	2.9	475	72	2.4	475	57	2.8	475	68	2.7	475	44	2.8	475	60	2.9	475
NO	52	1.7	1445	69	1.4	1445	50	1.7	1445	65	1.6	1445	39	1.6	1445	55	1.7	1445
NOT REPORTED	50	3.4	327	67	3.0	327	48	3.4	327	62	3.4	327	38	3.3	327	54	3.6	327
TOTAL W/IN SUBSCALE	53	1 3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	58	3.8	284	76	3.0	284	62	3.6	284	71	3.5	284	47	3.6	284	63	3.8	284
BLACK	47	6.6	91	59	6.1	91	40	6.7	91	57	6.8	91	33	6.0	91	47	7.0	91
HISPANIC	50	6.9	82	57	6.3	82	47	6.9	82	60	7.0	82	35	6.5	82	51	7.2	82
NO																		
WHITE	56	2.2	832	73	1 8	832	54	2.2	832	67	2.1	832	43	2.1	832	59	2.2	832
BLACK	46	3 6	307	58	3 5	307	35	3.5	307	56	3.7	307	27	3.2	307	45	3 8	307
HISPANIC	44	4 0	249	60	3.7	249	42	4.0	249	59	4.1	249	30	3.6	249	48	4.2	249
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS BY SEX OF EXAMINEE *																		
YES																		
MALE	54	3 8	279	71	3 1	279	58	3.7	279	67	3.6	279	45	3.6	279	60	3.8	279
FEMALE	58	4.5	196	73	3.8	196	57	4 4	196	69	4.3	196	43	4.3	196	60	4.6	196
NO																		
MALE	53	2.4	653	70	2 1	653	52	2.4	653	64	2.4	653	40	2.3	653	56	2 5	653
FEMALE	52	2.3	792	68	2.0	792	48	2.2	792	65	2 2	792	37	2.1	792	55	2.3	792
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	56	3.0	436	71	2.5	436	56	3.0	436	67	2.9	436	42	2.9	436	59	3.1	436
NONPUBLIC	55	10 4	39	79	8.3	39	67	9.3	39	73	9.4	39	55	9.9	39	66	10.0	39
NO																		
PUBLIC	52	1 7	1331	68	1 5	1331	49	1.7	1331	64	1.7	1331	38	1.6	1331	55	1 8	1331
NONPUBLIC	56	6 0	113	75	5 0	113	54	5.9	113	72	5.4	113	42	5.6	113	61	6.0	113

* Small subcategories were not included: so sample sizes may not match totals. See technical notes for discussion.

SOURCE· NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 14.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO PERFORM STATISTICAL ANALYSIS - COMPARISONS						
YES/NO	1.047	1.140	2.352 *	1.067	1.738	1.414
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	1.439	2.463	2.871 *	1.797	2.017	2.008
WH/HISP	0.996	2.768 *	1.853	1.360	1.717	1.506
BL/HISP	-0.33	0.284	-0.77	-0.31	-0.16	-0.36
NO						
WH/BL	2.400	3.797 *	4.670 *	2.626	4.073 *	3.218
WH/HISP	2.661 *	3.051 *	2.787 *	1.811	3.054 *	2.305
BL/HISP	0.373	-0.47	-1.24	-0.52	-0.57	-0.56
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.69	-0.24	0.208	-0.19	0.339	-0.11
NO						
M/F	0.209	0.590	1.206	-0.15	0.862	0.435
COMPARISON - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	0.064	-0.92	-1.17	-0.55	-1.20	-0.71
NO						
PUB/NPUB	-0.54	-1.22	-0.77	-1.35	-0.71	-0.91

* Statistically significant difference.

TABLE 15 1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER USE A COMPUTER TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?																		
YES	69	2.0	646	81	1.6	645	51	2.1	646	70	2.2	646	69	2.1	646	67	2.3	646
NO	62	1.6	1113	76	1.3	1112	42	1.6	1113	63	1.7	1113	60	1.7	1113	60	1.8	1113
NOT REPORTED	57	7.8	48	69	6.2	48	51	8.0	48	56	7.9	48	58	8.3	48	57	8.6	48
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
USE A COMPUTER TO PROCESS INFORMATION BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	71	2.3	467	85	1.8	466	55	2.6	467	73	2.5	467	72	2.4	467	71	2.7	467
BLACK	58	5.8	94	69	5.2	94	27	5.4	94	54	6.3	94	53	6.1	94	51	6.6	94
HISPANIC	54	7.8	59	71	5.9	59	33	6.5	59	51	7.7	59	51	7.6	59	50	8.2	59
NO																		
WHITE	66	1.9	772	79	1.5	771	47	2.0	772	66	2.0	772	64	2.0	772	64	2.2	772
BLACK	50	4.1	194	68	3.4	194	22	3.8	194	52	4.5	194	41	4.3	194	46	4.7	194
HISPANIC	46	5.2	111	65	4.5	111	25	4.8	111	48	5.7	111	46	5.6	111	46	6.0	111
USE A COMPUTER TO PROCESS INFORMATION BY SEX OF EXAMINEE *																		
YES																		
MALE	72	2.7	327	82	2.2	327	54	3.0	327	72	3.0	327	74	2.8	327	70	3.2	327
FEMALE	65	3.0	319	80	2.4	318	48	3.1	319	68	3.2	319	64	3.1	319	64	3.4	319
NO																		
MALE	62	2.2	581	75	1.8	580	44	2.2	581	62	2.4	581	61	2.3	581	60	2.5	581
FEMALE	62	2.4	532	77	1.9	532	39	2.4	532	64	2.5	532	58	2.5	532	60	2.7	532
USE A COMPUTER TO PROCESS INFORMATION BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	68	2.1	579	81	1.7	578	50	2.3	579	69	2.3	579	68	2.2	579	67	2.5	579
NONPUBLIC	73	6.1	67	86	4.8	67	59	6.6	67	77	6.3	67	77	6.2	67	75	6.8	67
NO																		
PUBLIC	61	1.7	1007	76	1.4	1006	41	1.7	1007	62	1.8	1007	59	1.8	1007	59	1.9	1007
NONPUBLIC	72	4.8	106	77	4.5	106	54	5.5	106	70	5.4	106	64	5.1	106	67	5.9	106

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 15.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO PROCESS INFORMATION - COMPARISONS						
YES/NO	2.654 *	2.551 *	3.413 *	2.480 *	3.611 *	2.636
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	2.212	2.912 *	4.643 *	2.768 *	3.015 *	2.721
WH/HISP	2.187	2.218	3.096 *	2.795 *	2.631	2.387
BL/HISP	0.402	-0.28	-0.70	0.380	0.112	0.104
NO						
WH/BL	3.348 *	3.027 *	5.838 *	2.812 *	4.776 *	3.498
WH/HISP	3.608 *	2.952 *	4.224 *	2.961 *	2.954 *	2.785
BL/HISP	0.712	0.498	-0.47	0.551	-0.71	-0.03
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	1.798	0.587	1.539	0.805	2.221	1.252
NO						
M/F	-0.03	-0.83	1.435	-0.83	1.093	0.054
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.78	-1.13	-1.30	-1.17	-1.33	-1.11
NO						
PUB/NPUB	-2.18	-0.14	-2.24	-1.44	-0.88	-1.31

* Statistically significant difference.

TABLE 15 2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER USE A COMPUTER TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER USE A COMPUTER TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?																		
YES	55	2.8	496	72	2.3	496	57	2.7	496	67	2.7	496	44	2.7	496	60	2.9	496
NO	53	1.6	1606	69	1.4	1606	50	1.6	1606	65	1.5	1606	39	1 5	1606	55	1.6	1606
NOT REPORTED	45	5 0	145	60	4.5	145	43	5.1	145	56	5.1	145	35	4.8	145	48	5.3	145
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1 1	2247	51	1.3	2247	65	1.3	2247	40	1 3	2247	56	1.4	2247
USE A COMPUTER TO PROCESS INFORMATION BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	58	3.6	316	77	2.8	316	63	3.4	316	70	3.3	316	47	3.4	316	64	3.5	316
BLACK	45	7.5	72	60	7.0	72	39	7.2	72	57	7.6	72	31	6.7	72	47	7.8	72
HISPANIC	44	6.5	85	55	6 4	85	39	6.5	85	55	6.9	85	30	6.1	85	46	7.0	85
NO																		
WHITE	56	2.1	921	73	1.7	921	54	2.1	921	68	2.0	921	43	2.0	921	59	2.1	921
BLACK	46	3 3	363	58	3 2	363	36	3.3	363	56	3.4	363	28	3.0	363	45	3.5	363
HISPANIC	45	3.9	261	60	3.6	261	43	3.9	261	60	4.0	261	30	3 6	261	49	4.1	261
USE A COMPUTER TO PROCESS INFORMATION BY SEX OF EXAMINEE *																		
YES																		
MALE	53	3 7	269	70	3 1	289	57	3.6	289	66	3.6	289	43	3 5	289	58	3.7	289
FEMALE	58	4.4	207	76	3.6	207	58	4.2	207	69	4.2	207	45	4 2	207	62	4 4	207
NO																		
MALE	53	2.3	748	70	1.9	748	52	2.3	748	65	2.2	748	40	2.2	748	56	2.4	748
FEMALE	53	2 2	858	68	1.9	858	48	2.2	858	65	2 1	858	37	2.0	858	55	2 3	858
USE A COMPUTER TO PROCESS INFORMATION BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	55	3.0	452	71	2.5	452	56	2.9	452	66	2 9	452	43	2.9	452	59	3 0	452
NONPUBLIC	59	9 8	43	84	7 1	43	71	8.7	43	76	8.7	43	56	9.0	43	71	9.3	43
NO																		
PUBLIC	53	1 6	1488	69	1 4	1488	50	1.6	1488	65	1.6	1488	38	1.5	1488	55	1.7	1488
NONPUBLIC	54	5 9	117	73	5 1	117	54	5 9	117	71	5 5	117	44	5.7	117	60	6 0	117

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion

SOURCE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 15.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
USE A COMPUTER TO PROCESS INFORMATION - COMPARISONS						
YES/NO	0.768	1.289	2.392 *	0.705	1.655	1.368
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	1.459	2.177	2.942 *	1.522	2.221	1.943
WH/HISP	1.813	3.182 *	3.188 *	1.987	2.411	2.312
BL/HISP	0.130	0.603	-0.01	0.263	0.010	0.143
NO						
WH/BL	2.435	4.011 *	4 838 *	2.905 *	4.232 *	3.390
WH/HISP	2.394	3.100 *	2.597	1.853	3.041 *	2.248
BL/HISP	0.215	-0.43	-1.41	-0.63	-0.58	-0.64
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2 24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.91	-1.24	-0 34	-0.61	-0.25	-0.60
NO						
M/F	0 126	0.878	1 460	-0.29	1.077	0 490
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.40	-1.68	-1.66	-1.04	-1.46	1.20
NO						
PUB/NPUB	-0.21	-0.90	-0 67	-1.07	-0.92	-0.73

* Statistically significant difference.

TABLE 16.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A MATH PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A MATH PROBLEM?																		
YES	70	2.0	653	80	1.8	653	54	2.1	653	72	2.1	653	71	2.0	653	69	2.2	653
NO	61	1.8	1125	76	1.3	1123	41	1.6	1125	61	1.8	1125	58	1.7	1125	58	1.9	1125
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
WRITE A PROGRAM TO SOLVE A MATH PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	73	2.2	471	84	1.8	471	59	2.5	471	76	2.4	471	75	2.4	471	73	2.6	471
BLACK	55	5.6	104	66	4.4	104	26	4.9	104	53	6.0	104	47	5.8	104	49	6.2	104
HISPANIC	59	7.4	52	70	5.9	52	34	6.9	52	59	7.8	52	52	8.1	52	54	8.4	52
NO																		
WHITE	65	1.9	785	79	1.5	783	45	2.0	785	65	2.1	785	62	2.0	785	62	2.2	785
BLACK	52	4.1	187	70	3.6	187	24	3.9	187	53	4.6	187	44	4.4	187	47	4.8	187
HISPANIC	43	5.3	119	64	4.4	119	27	4.7	119	44	5.6	119	46	5.4	119	44	5.9	119
WRITE A PROGRAM TO SOLVE A MATH PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	71	2.4	394	79	2.0	394	55	2.7	394	72	2.7	394	72	2.6	394	70	2.9	394
FEMALE	68	3.3	259	82	2.5	259	52	3.4	259	73	3.4	259	69	3.3	259	69	3.6	259
NO																		
MALE	62	2.4	518	76	1.9	517	43	2.4	518	60	2.6	518	61	2.5	518	59	2.7	518
FEMALE	61	2.2	607	77	1.8	606	39	2.2	607	63	2.4	607	56	2.3	607	58	2.6	607
WRITE A PROGRAM TO SOLVE A MATH PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	69	2.1	575	80	1.7	575	53	2.2	575	71	2.3	575	70	2.2	575	69	2.4	575
NONPUBLIC	75	5.3	78	85	4.6	78	60	6.2	78	79	5.9	78	77	5.9	78	75	6.4	78
NO																		
PUBLIC	60	1.7	1027	76	1.4	1025	39	1.7	1027	60	1.8	1027	58	1.8	1027	58	2.0	1027
NONPUBLIC	72	5.1	98	78	4.6	98	53	5.7	98	68	5.7	98	63	5.2	98	66	6.1	98

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 16.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO SOLVE A MATH PROBLEM - COMPARISONS						
YES/NO	3.507 *	1.901	4.912 *	4.017 *	4.663 *	3.739
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	3.072 *	3.934 *	6.103 *	3.483 *	4.586 *	3.647
WH/HISP	1.839	2.238	3.392 *	2.064	2.795 *	2.175
BL/HISP	-0.46	-0.65	-1.00	-0.55	-0.51	-0.52
NO						
WH/BL	2.724 *	2.493	4.871 *	2.321	3.717 *	2.859
WH/HISP	3.836 *	3.358 *	3.584 *	3.449 *	2.876 *	2.920
BL/HISP	1.394	1.005	-0.49	1.217	-0.20	0.422
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	0.755	-0.74	0.670	-0.30	0.734	0.195
NO						
M/F	0.303	-0.07	1.366	-0.73	1.325	0.214
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.94	-1.02	-1.14	-1.18	-1.05	-0.96
NO						
PUB/NPUB	-2.30 *	-0.27	-2.33 *	-1.26	-0.99	-1.32

* Statistically significant difference.

TABLE 16.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A MATH PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A MATH PROBLEM?																		
YES	53	2.1	849	70	1.8	849	52	2.1	849	66	2.1	849	42	2.0	849	58	2.2	849
NO	54	1.8	1279	70	1.5	1279	52	1.7	1279	65	1.7	1279	39	1.7	1279	56	1.8	1279
NOT REPORTED	37	5.4	119	50	5.4	119	37	5.5	119	50	5.7	119	27	5.1	119	41	5.9	119
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
WRITE A PROGRAM TO SOLVE A MATH PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	56	2.9	491	74	2.3	491	58	2.8	491	70	2.7	491	47	2.7	491	62	2.9	491
BLACK	45	4.7	176	57	4.6	176	38	4.7	176	56	4.9	176	27	4.1	176	45	5.0	176
HISPANIC	42	5.1	140	57	4.9	140	41	5.2	140	58	5.4	140	31	4.7	140	47	5.5	140
NO																		
WHITE	57	2.3	773	74	1.9	773	56	2.3	773	68	2.2	773	42	2.2	773	60	2.3	773
BLACK	46	3.9	261	59	3.7	261	36	3.8	261	57	4.0	261	29	3.6	261	46	4.1	261
HISPANIC	47	4.5	202	61	4.1	202	43	4.4	202	59	4.5	202	31	4.1	202	49	4.7	202
WRITE A PROGRAM TO SOLVE A MATH PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	53	2.9	473	70	2.4	473	55	2.8	473	66	2.8	473	44	2.7	473	58	2.9	473
FEMALE	53	3.3	376	70	2.8	376	49	3.2	376	67	3.1	376	40	3.0	376	57	3.4	376
NO																		
MALE	53	2.6	570	71	2.2	570	53	2.6	570	65	2.6	570	40	2.5	570	56	2.7	570
FEMALE	55	2.4	709	70	2.1	709	51	2.4	709	66	2.3	709	39	2.3	709	56	2.5	709
WRITE A PROGRAM TO SOLVE A MATH PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	53	2.2	784	69	1.9	784	52	2.2	784	66	2.2	784	41	2.1	784	57	2.3	784
NONPUBLIC	56	8.0	64	76	6.6	64	62	7.7	64	73	7.2	64	53	7.7	64	65	7.9	64
NO																		
PUBLIC	54	1.8	1183	69	1.6	1183	51	1.8	1183	65	1.8	1183	39	1.7	1183	56	1.9	1183
NONPUBLIC	56	6.5	96	77	5.3	96	57	6.3	96	71	6.0	96	44	6.2	96	61	6.5	96

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE. NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 16.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO SOLVE A MATH PROBLEM - COMPARISONS						
YES/NO	-0.32	-0.16	0.289	0.370	1.214	0.419

COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	1.960	3.422 *	3.646 *	2.497	4.008 *	2.850
WH/HISP	2.347	3.219 *	2.830 *	1.903	3.024 *	2.328
BL/HISP	0.418	-0.01	-0.47	-0.34	-0.55	-0.26
NO						
WH/BL	2.324	3.545 *	4.583 *	2.377	3.184 *	2.979
WH/HISP	1.927	2.921 *	2.513	1.735	2.530	2.027
BL/HISP	-0.13	-0.29	-1.33	-0.36	-0.27	-0.56

COMPARISON - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	0.069	-0.02	1.206	-0.38	0.809	0.270
NO						
M/F	-0.36	0.528	0.511	-0.40	0.295	0.027

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
PUB/NPUB	-0.33	-0.96	-1.24	-1.02	-1.43	-0.97
NO						
PUB/NPUB	-0.29	-1.45	-0.86	-0.92	-0.82	-0.82

* Statistically significant difference.

TABLE 17 1. AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER WRITE A COMPUTER PROGRAM TO PLAY A GAME?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO PLAY A GAME?																		
YES	65	1.8	798	76	1.5	798	48	1.9	798	66	2.0	798	64	1.9	798	63	2.1	798
NO	64	1.7	980	80	1.3	978	44	1.7	980	65	1.8	980	63	1.8	980	62	2.0	980
NOT REPORTED	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
WRITE A PROGRAM TO PLAY A GAME BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	69	2.1	558	80	1.8	558	53	2.3	558	69	2.3	558	67	2.2	558	67	2.5	558
BLACK	52	4.8	133	61	4.4	133	24	4.4	133	52	5.3	133	44	5.1	133	46	5.5	133
HISPANIC	50	6.3	78	67	4.8	78	30	5.9	78	49	6.7	78	47	6.7	78	47	7.1	78
NO																		
WHITE	67	2.0	702	82	1.5	700	48	2.1	702	69	2.1	702	67	2.1	702	66	2.3	702
BLACK	54	4.6	156	75	3.6	156	24	4.3	156	54	5.0	156	46	4.9	156	48	5.3	156
HISPANIC	45	5.9	91	66	5.0	91	27	5.1	91	48	6.2	91	47	6.2	91	46	6.6	91
WRITE A PROGRAM TO PLAY A GAME BY SEX OF EXAMINEE *																		
YES																		
MALE	68	2.4	443	78	1.9	443	51	2.5	443	67	2.6	443	67	2.5	443	66	2.7	443
FEMALE	62	2.9	355	74	2.5	355	43	3.0	355	64	3.1	355	58	2.9	355	60	3.3	355
NO																		
MALE	64	2.5	470	78	2.0	469	46	2.5	470	63	2.7	470	64	2.6	470	62	2.8	470
FEMALE	64	2.4	510	81	1.8	509	42	2.4	510	67	2.5	510	62	2.5	510	62	2.7	510
WRITE A PROGRAM TO PLAY A GAME BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	64	2.0	718	76	1.6	718	46	2.0	718	65	2.1	718	63	2.0	718	62	2.2	718
NONPUBLIC	74	5.2	80	81	5.0	80	60	6.4	80	73	6.1	80	68	5.6	80	71	6.6	80
NO																		
PUBLIC	63	1.9	883	79	1.4	881	43	1.8	883	64	2.0	883	62	1.9	883	61	2.1	883
NONPUBLIC	72	5.2	97	81	4.3	97	53	5.5	97	73	5.5	97	70	5.4	97	69	5.9	97

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 17.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO PLAY A GAME - COMPARISONS						
YES/NO	0.711	-1.66	1.345	0.295	0.228	0.382

COMAPRISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	3.127 *	4.044 *	5.770 *	2.979 *	4.116 *	3.383
WH/HISP	2.807	2.581	3.543 *	2.802 *	2.792 *	2.589
BL/HISP	0.288	-0.92	-0.84	0.303	-0.39	-0.12
NO						
WH/BL	2.646	1.950	4.986 *	2.695 *	4.053 *	3.030
WH/HISP	3.459 *	3.128 *	3.758 *	3.174 *	3.019 *	2.820
BL/HISP	1.119	1.394	-0.41	0.765	-0.21	0.272

COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	1.669	1.239	1.969	0.796	2.359 *	1.313
NO						
M/F	0	-1.41	0.972	-1.05	0.694	-0.15

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
PUB/NPUB	-1.74	-1.02	-2.08	-1.20	-0.86	-1.21
NO						
PUB/NPUB	-1.71	-0.31	-1.67	-1.42	-1.38	-1.29

* Statistically significant difference.

TABLE 17.2· AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRAOE 7
"OIO YOU EVER WRITE A COMPUTER PROGRAM TO PLAY A GAME?"

	FUNOAMENTAL METHOOS			OATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	5E	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
OID YOU EVER WRITE A COMPUTER PROGRAM TO PLAY A GAME?																		
YES	53	1.8	1247	69	1.5	1247	51	1.8	1247	66	1.7	1247	40	1.7	1247	56	1.8	1247
NO	55	2.1	893	71	1.8	893	53	2.1	893	66	2.1	893	41	2.0	893	57	2.2	893
NOT REPORTEO	38	5.7	107	50	5.7	107	39	5.8	107	49	6.1	107	28	5.5	107	41	6.2	107
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
WRITE A PROGRAM TO PLAY A GAME BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	55	2.4	722	74	1.9	722	56	2.3	722	69	2.2	722	44	2.3	722	60	2.4	722
BLACK	47	3.9	256	58	3.8	256	37	3.9	256	56	4.1	256	29	3.5	256	46	4.2	256
HISPANIC	44	4.2	216	55	4.0	216	40	4.2	216	58	4.4	216	30	3.8	216	47	4.5	216
NO																		
WHITE	58	2.7	543	75	2.2	543	57	2.7	543	68	2.6	543	44	2.6	543	61	2.8	543
BLACK	45	4.7	181	59	4.5	181	36	4.6	181	57	4.8	181	27	4.2	181	46	4.9	181
HISPANIC	45	5.5	134	65	4.9	134	45	5.4	134	60	5.5	134	32	5.1	134	50	5.7	134
WRITE A PROGRAM TO PLAY A GAME BY SEX OF EXAMINEE *																		
YES																		
MALE	52	2.4	666	70	2.0	666	53	2.4	666	65	2.4	666	42	2.3	666	57	2.5	666
FEMALE	53	2 6	581	68	2.3	581	48	2.6	581	66	2.6	581	38	2.5	581	56	2.7	581
NO																		
MALE	54	3 2	377	72	2 7	377	53	3.2	377	65	3.1	377	41	3.0	377	57	3.3	377
FEMALE	55	2 8	516	71	2.4	516	52	2.8	516	66	2.7	516	40	2.7	516	57	2.9	516
WRITE A PROGRAM TO PLAY A GAME BY TYPE OF SCHOOL EXAMINEE ATTENOS *																		
YES																		
PUBLIC	53	1 9	1157	69	1.6	1157	51	1 8	1157	65	1.8	1157	39	1.7	1157	56	1.9	1157
NONPUBLIC	56	6 8	88	75	5.6	88	59	6.6	88	73	6.1	88	49	6.6	88	63	6.8	88
NO																		
PUBLIC	55	2.2	815	70	1 9	815	52	2.2	815	65	2.2	815	40	2.1	815	57	2.3	815
NONPUBLIC	56	7 2	78	79	5.8	78	58	6.9	78	71	6.8	78	45	6.7	78	62	7.2	78

* Small subcategories were not included, so sample sizes may not match totals See technical notes for discussion.

SOURCE· NATIONAL ASSESSMENT OF EOUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 17.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO PLAY A GAME - COMPARISONS						
YES/NO	-0.68	-0.93	-0.54	-0.07	-0.15	-0.35
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	1.871	3.644 *	4.277 *	2.780	3.625 *	3.063
WH/HISP	2.310	4.096 *	3.299 *	2.266	3.109 *	2.625
BL/HISP	0.435	0.527	-0.61	-0.30	-0.26	-0.22
NO						
WH/BL	2.315	3.197 *	3.875 *	1.975	3.436 *	2.689
WH/HISP	2.032	1.822	1.968	1.281	2.160	1.635
BL/HISP	-0.01	-0.91	-1.22	-0.40	-0.68	-0.63
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.19	0.355	1.376	-0.28	1.123	0.379
NO						
M/F	-0.07	0.361	0.357	-0.36	0.099	0
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.38	-1.02	-1.21	-1.19	-1.46	-1.06
NO						
PUB/NPUB	-0.14	-1.43	-0.89	-0.81	-0.78	-0.75

* Statistically significant difference.

TABLE 18.1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM?																		
YES	72	3.0	269	82	2.3	269	52	3.3	269	73	3.2	269	74	3.1	269	70	3.4	269
NO	63	1.4	1461	77	1.1	1459	44	1.4	1461	64	1.5	1461	61	1.5	1461	61	1.6	1461
NOT REPORTED	60	5.9	77	73	4.9	77	50	6.1	77	64	6.0	77	61	5.9	77	61	6.6	77
TOTAL WITHIN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	76	3.3	195	86	2.5	195	57	3.9	195	76	3.7	195	78	3.5	195	74	3.9	195
BLACK	59	9.8	34	73	7.8	34	35	8.8	34	56	10.5	34	55	10.1	34	54	10.9	34
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NO																		
WHITE	66	1.7	1019	80	1.3	1017	49	1.7	1019	67	1.8	1019	65	1.7	1019	64	1.9	1019
BLACK	52	3.6	251	68	3.0	251	23	3.3	251	53	3.9	251	44	3.8	251	47	4.1	251
HISPANIC	47	4.8	141	67	3.9	141	29	4.3	141	48	5.1	141	48	5.0	141	47	5.4	141
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	74	4.0	153	83	2.8	153	54	4.2	153	74	4.2	153	77	3.9	153	72	4.5	153
FEMALE	68	4.6	116	79	3.8	116	49	5.1	116	70	5.0	116	70	4.9	116	68	5.4	116
NO																		
MALE	64	2.0	728	76	1.6	727	46	2.0	728	63	2.1	728	63	2.1	728	61	2.2	728
FEMALE	62	2.0	733	78	1.6	732	42	2.0	733	65	2.2	733	59	2.1	733	60	2.3	733
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	71	3.2	241	81	2.4	241	51	3.4	241	72	3.4	241	74	3.2	241	70	3.6	241
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NO																		
PUBLIC	62	1.5	1321	77	1.2	1319	43	1.5	1321	68	1.6	1321	60	1.6	1321	60	1.7	1321
NONPUBLIC	72	4.2	140	79	3.8	140	56	4.8	140	71	4.7	140	66	4.4	140	68	5.0	140

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 18.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM - COMPARISONS						
YES/NO	2.647 *	1.799	2.221 *	2.511 *	3.846 *	2.504
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.5 FOR 4 TESTS AT .05)						
YES						
WH/BL	1.640	1.557	2.280	1.812	2.186	1.773
WH/HISP						
BL/HISP						
NO						
WH/BL	3.597 *	3.559 *	6.744 *	3.170 *	5.022 *	3.839
WH/HISP	3.776 *	3.178 *	4.304 *	3.420 *	3.227 *	3.089
BL/HISP	0.835	0.281	-1.50	0.744	-0.60	0.029
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	1.068	0.885	0.724	0.645	1.115	0.701
NO						
M/F	0.564	-0.96	1.708	-0.85	1.494	0.279
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
YES						
PUB/NPUB						
NO						
PUB/NPUB	-2.23 *	-0.62	-2.69 *	-1	-1.27	-1.59

* Statistically significant difference.

TABLE 18.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM?																		
YES	48	4.2	213	60	3.9	213	48	4.2	213	60	4.2	213	38	4.0	213	52	4.4	213
NO	54	1.5	1763	71	1.3	1763	52	1.5	1763	66	1.5	1763	40	1.4	1763	57	1.6	1763
NOT REPORTED	51	3.7	271	67	3.2	271	48	3.7	271	63	3.7	271	37	3.4	271	54	3.9	271
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	53	6.3	96	65	5.8	96	55	6.3	96	66	6.1	96	44	6.0	96	58	6.5	96
BLACK	44	8.1	58	54	7.6	58	38	8.1	58	51	8.6	58	28	7.5	58	43	8.6	58
HISPANIC	37	8.4	51	46	8.5	51	34	8.6	51	52	9.1	51	27	7.9	51	41	9.2	51
NO																		
WHITE	57	2.0	1054	75	1.6	1054	57	1.9	1054	68	1.9	1054	44	1.9	1054	60	2.0	1054
BLACK	46	3.3	359	59	3.2	359	36	3.3	359	58	3.4	359	29	3.0	359	46	3.5	359
HISPANIC	46	3.7	281	61	3.4	281	43	3.7	281	60	3.8	281	31	3.4	281	49	3.9	281
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM BY SEX OF EXAMINEE *																		
YES																		
MALE	47	5.2	134	57	4.9	134	49	5.2	134	58	5.3	134	40	5.1	134	51	5.5	134
FEMALE	50	7.1	79	65	6.5	79	45	7.1	79	64	7.0	79	35	6.5	79	52	7.4	79
NO																		
MALE	54	2.2	827	72	1.8	827	54	2.2	827	66	2.1	827	42	2.1	827	58	2.2	827
FEMALE	54	2.1	936	69	1.8	936	51	2.1	936	66	2.0	936	39	2.0	936	56	2.1	936
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	48	4.4	193	59	4.1	193	46	4.5	193	59	4.5	193	36	4.2	193	50	4.7	193
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NO																		
PUBLIC	54	1.6	1628	70	1.3	1628	52	1.6	1628	65	1.5	1628	40	1.5	1628	56	1.6	1628
NONPUBLIC	55	5.6	134	77	4.5	134	57	5.4	134	72	5.1	134	46	5.2	134	62	5.6	134

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 18.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO SOLVE A LINEAR PROGRAMMING PROBLEM - COMPARISONS						
YES/NO	-1.24	-2.66 *	-0.96	-1.31	-0.51	-1.13
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	0.930	1.159	1.576	1.404	1.570	1.334
WH/HISP	1.576	1.838	1.975	1.248	1.658	1.502
BL/HISP	0.602	0.675	0.415	-0.08	0.128	0.198
NO						
WH/BL	2.636	4.407 *	5.347 *	2.767 *	4.349 *	3.560
WH/HISP	2.534	3.677 *	3.175 *	2.033	3.273 *	2.523
BL/HISP	0.099	-0.40	-1.43	-0.42	-0.57	-0.62
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.35	-0.90	0.530	-0.62	0.591	-0.11
NO						
M/F	0.132	1.051	1.036	-0.13	0.803	0.386
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB						
NO						
PUB/NPUB	-0.22	-1.50	-0.95	-1.24	-1.13	-0.96

* Statistically significant difference.

TABLE 19 1· AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DID YOU EVER WRITE A COMPUTER PROGRAM TO PERFORM STATISTICAL ANALYSIS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO PERFORM STATISTICAL ANALYSIS?																		
YES	69	2.4	447	81	1.9	447	52	2.5	447	70	2.6	447	70	2.5	447	68	2.8	447
NO	63	1.5	1302	77	1.2	1300	44	1.5	1302	64	1.6	1302	61	1.6	1302	61	1.7	1302
NOT REPORTED	50	7.0	58	63	5.9	58	32	6.6	58	49	7.4	58	54	7.3	58	49	7.9	58
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	71	2.7	329	85	2.1	329	56	3.0	329	73	3.0	329	73	2.8	329	71	3.1	329
BLACK	59	7.0	70	68	5.6	70	25	5.8	70	56	7.6	70	50	7.3	70	51	7.9	70
HISPANIC	60	9 6	33	77	6.2	33	36	8.6	33	58	9.8	33	56	10.5	33	56	10.8	33
NO																		
WHITE	67	1.8	906	80	1.4	904	48	1.9	906	68	1.9	906	65	1.8	906	65	2.0	906
BLACK	51	3.8	219	69	3.2	219	25	3.6	219	53	4.2	219	44	4.0	219	47	4.4	219
HISPANIC	45	4.9	133	64	4.2	133	28	4.4	133	48	5.2	133	46	5.1	133	46	5.5	133
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS BY SEX OF EXAMINEE *																		
YES																		
MALE	73	3 0	250	81	2.5	250	56	3.2	250	71	3.4	250	73	3.2	250	70	3.6	250
FEMALE	64	3.8	197	81	2.9	197	46	3.9	197	70	4.0	197	66	4.0	197	65	4.3	197
NO																		
MALE	63	2.1	651	76	1 7	650	46	2.2	651	63	2.2	651	63	2.2	651	61	2.4	651
FEMALE	63	2 2	651	78	1.8	650	42	2.2	651	65	2.3	651	59	2.2	651	61	2.4	651
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	68	2 6	398	80	2 0	398	50	2.6	398	70	2.8	398	69	2.7	398	67	2.9	398
NONPUBLIC	76	6.1	49	89	4.8	49	66	7.6	49	76	7.6	49	79	7.1	49	76	7.9	49
NO																		
PUBLIC	62	1 6	1177	77	1.3	1175	43	1.6	1177	63	1.7	1177	60	1.6	1177	60	1.8	1177
NONPUBLIC	72	4 6	125	77	4 2	125	54	5.1	125	72	4.9	125	65	4.7	125	68	5.3	125

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE. NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 19.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS - COMPARISONS						
YES/NO	2.200 *	1.960	2.761 *	2.126 *	3.128 *	2.191

COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)

YES						
WH/BL	1.515	2.740 *	4.839 *	2.074	2.068 *	2.334
WH/HISP	1.077	1.113	2.186	1.410	1.512	1.313
BL/HISP	-0.05	-1.08	-1.11	-0.20	-0.47	-0.37
NO						
WH/BL	3.689 *	3.231 *	5.884 *	3.278 *	4.760 *	3.719
WH/HISP	4.126 *	3.558 *	4.292 *	3.590 *	3.477 *	3.247
BL/HISP	0.980	0.812	-0.55	0.746	-0.35	0.156

COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
M/F	1.929	0.052	2.023	0.208	1.254	0.857
NO						
M/F	0.099	-0.53	1.141	-0.65	1.448	0.205

COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)

YES						
PUB/NPUB	-1.07	-1.74	-1.92	-0.81	-1.39	-1.08
NO						
PUB/NPUB	-2.06	-0.06	-2.07	-1.68	-0.96	-1.41

* Statistically significant difference.

TABLE 19.2. AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER WRITE A COMPUTER PROGRAM TO PERFORM STATISTICAL ANALYSIS?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO PERFORM STATISTICAL ANALYSIS?																		
YES	53	3.5	317	68	3.0	317	55	3.5	317	66	3.4	317	41	3.3	317	58	3.6	317
NO	54	1.5	1687	70	1.3	1687	51	1.5	1687	66	1.5	1687	40	1.5	1687	57	1.6	1687
NOT REPORTED	46	3.9	243	63	3.5	243	46	3.9	243	60	3.9	243	34	3.8	243	50	4.1	243
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	56	4.9	174	74	3.9	174	61	4.7	174	71	4.4	174	46	4.6	174	63	4.8	174
BLACK	48	7.7	67	57	7.1	67	41	7.7	67	56	8.0	67	32	7.2	67	47	8.2	67
HISPANIC	39	7.3	63	48	7.2	63	37	7.4	63	51	8.1	63	27	6.7	63	42	8.0	63
NO																		
WHITE	57	2.0	1010	74	1.6	1010	56	2.0	1010	68	1.9	1010	44	1.9	1010	60	2.0	1010
BLACK	45	3.4	345	59	3.3	345	36	3.3	345	57	3.5	345	27	3.0	345	45	3.6	345
HISPANIC	46	3.9	264	62	3.6	264	43	3.9	264	60	3.9	264	31	3.6	264	49	4.1	264
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS BY SEX OF EXAMINEE *																		
YES																		
MALE	51	4.6	183	66	3.9	183	56	4.5	183	64	4.4	183	42	4.3	183	57	4.7	183
FEMALE	55	5.5	134	71	4.5	134	54	5.4	134	68	5.2	134	41	5.2	134	59	5.6	134
NO																		
MALE	54	2.2	792	71	1.9	792	53	2.2	792	65	2.2	792	41	2.1	792	57	2.3	792
FEMALE	54	2.1	895	69	1.9	895	50	2.1	895	66	2.1	895	39	2.0	895	56	2.2	895
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	53	3.7	297	68	3.1	297	54	3.6	297	65	3.5	297	40	3.4	297	57	3.7	297
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NO																		
PUBLIC	54	1.6	1557	69	1.4	1557	51	1.6	1557	65	1.6	1557	40	1.5	1557	56	1.7	1557
NONPUBLIC	56	5.6	130	77	4.6	130	57	5.4	130	71	5.2	130	46	5.3	130	62	5.6	130

* Small subcategories were not included, so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 19.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO PERFORM STATISTICAL ANALYSIS - COMPARISONS						
YES/NO	-0.28	-0.61	0.954	0.081	0.303	0.255
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	0.946	2.112	2.321	1.658	1.600	1.691
WH/HISP	2.015	3.175 *	2.810 *	2.096	2.376	2.272
BL/HISP	0.858	0.882	0.354	0.377	0.566	0.455
NO						
WH/BL	2.848 *	4.038 *	5.161 *	2.761 *	4.703 *	3.545
WH/HISP	2.443	3.066 *	2.903 *	1.812	3.214 *	2.305
BL/HISP	-0.09	-0.57	-1.44	-0.58	-0.81	-0.75
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.56	-0.88	0.269	-0.58	0.192	-0.24
NO						
M/F	0.329	0.793	1.047	-0.13	0.756	0.378
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
YES						
PUB/NPUB						
NO						
PUB/NPUB	-0.34	-1.50	-1.05	-1.09	-1.18	-0.97

* Statistically significant difference.

TABLE 20 1: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
"DIO YOU EVER WRITE A COMPUTER PROGRAM TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DIO YOU EVER WRITE A COMPUTER PROGRAM TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?																		
YES	70	2.5	399	81	2.1	399	52	2.7	399	71	2.7	399	70	2.6	399	68	2.3	399
NO	63	1.5	1360	77	1.2	1358	44	1.5	1360	64	1.6	1360	61	1.5	1360	61	1.7	1360
NOT REPORTED	51	8.3	48	62	6.6	48	40	7.5	48	52	8.2	48	59	7.6	48	53	8.6	48
TOTAL W/IN SUBSCALE	64	1.3	1807	78	1.0	1805	46	1.3	1807	65	1.3	1807	63	1.3	1807	62	1.4	1807
WRITE A PROGRAM TO PROCESS INFORMATION BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	72	2.9	282	84	2.3	282	56	3.3	282	74	3.2	282	73	3.0	282	71	3.4	282
BLACK	58	7.1	62	71	6.3	62	27	6.3	62	56	8.0	62	51	7.4	62	52	8.2	62
HISPANIC	55	8.5	44	75	6.2	44	32	7.5	44	55	8.9	44	56	8.3	44	54	9.4	44
NO																		
WHITE	67	1.7	960	80	1.3	958	48	1.8	960	68	1.8	960	65	1.8	960	65	2.0	960
BLACK	52	3.8	227	68	3.2	227	24	3.5	227	52	4.1	227	43	4.0	227	46	4.3	227
HISPANIC	46	5.1	125	65	4.3	125	28	4.5	125	47	5.3	125	45	5.4	125	45	5.7	125
WRITE A PROGRAM TO PROCESS INFORMATION BY SEX OF EXAMINEE *																		
YES																		
MALE	74	3.2	209	83	2.7	209	57	3.6	209	73	3.7	209	74	3.4	209	71	3.9	209
FEMALE	65	3.9	190	79	3.2	190	46	4.0	190	69	4.1	190	66	4.0	190	65	4.4	190
NO																		
MALE	63	2.0	696	77	1.6	695	46	2.1	696	63	2.2	696	64	2.1	696	62	2.3	696
FEMALE	63	2.1	664	78	1.7	663	42	2.1	664	65	2.2	664	59	2.2	664	61	2.4	664
WIRTE A PROGRAM TO PROCESS INFORMATION BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	70	2.7	352	80	2.2	352	50	2.8	352	70	2.9	352	69	2.8	352	67	3.1	352
NONPUBLIC	71	6.8	47	86	5.6	47	60	7.9	47	74	7.7	47	79	7.3	47	74	8.2	47
NO																		
PUBLIC	62	1.6	1235	77	1.2	1233	43	1.6	1235	63	1.6	1235	61	1.6	1235	60	1.7	1235
NONPUBLIC	73	4.4	125	78	4.1	125	54	5.1	125	72	4.9	125	64	4.7	125	68	5.3	125

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 20.1A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO PROCESS INFORMATION - COMPARISONS						
YES/NO	2.427 *	1.512	2.580 *	2.056 *	2.897 *	2.149
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	1.806	2.047	4.085 *	2.014	2.746 *	2.172
WH/HISP	1.928	1.365	2.924 *	1.956	1.980	1.775
BL/HISP	0.314	-0.52	-0.49	0.100	-0.40	-0.12
NO						
WH/BL	3.639 *	3.607 *	6.268 *	3.424 *	5.017 *	3.909
WH/HISP	3.895 *	3.467 *	4.255 *	3.596 *	3.510 *	3.236
BL/HISP	0.903	0.583	-0.69	0.726	-0.31	0.126
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	1.877	0.907	2.066	0.723	1.573	1.145
NO						
M/F	0.271	-0.68	1.375	-0.64	1.603	0.300
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
PUB/NPUB	-0.20	-0.97	-1.11	-0.51	-1.28	-0.76
NO						
PUB/NPUB	-2.46 *	-0.25	-2.12	-1.73	-0.71	-1.38

* Statistically significant difference.

TABLE 20.2: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 7
"DID YOU EVER WRITE A COMPUTER PROGRAM TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?"

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
DID YOU EVER WRITE A COMPUTER PROGRAM TO PROCESS BUSINESS, SCIENCE OR SOCIAL INFORMATION?																		
YES	55	3.7	289	71	3.1	289	56	3.6	289	67	3.5	289	44	3.5	289	59	3.7	289
NO	54	1.5	1797	70	1.3	1797	51	1.5	1797	66	1.4	1797	40	1.4	1797	56	1.5	1797
NOT REPORTED	40	4.8	161	53	4.5	161	38	4.7	161	53	5.0	161	30	4.5	161	44	5.1	161
TOTAL W/IN SUBSCALE	53	1.3	2247	69	1.1	2247	51	1.3	2247	65	1.3	2247	40	1.3	2247	56	1.4	2247
WRITE A PROGRAM TO PROCESS INFORMATION BY RACE/ETHNICITY OF EXAMINEE *																		
YES																		
WHITE	56	4.8	172	75	3.8	172	61	4.6	172	71	4.5	172	47	4.7	172	63	4.8	172
BLACK	47	8.2	57	60	7.9	57	40	8.2	57	53	8.4	57	31	7.5	57	46	8.6	57
HISPANIC	51	8.6	51	62	8.2	51	47	8.9	51	61	8.9	51	36	8.1	51	52	9.1	51
NO																		
WHITE	57	1.9	1069	74	1.6	1069	56	1.9	1069	68	1.8	1069	44	1.8	1069	60	2.0	1069
BLACK	46	3.3	370	59	3.1	370	36	3.2	370	57	3.4	370	28	2.9	370	46	3.5	370
HISPANIC	44	3.7	285	59	3.4	285	41	3.7	285	58	3.8	285	30	3.4	285	48	3.9	285
WRITE A PROGRAM TO PROCESS INFORMATION BY SEX OF EXAMINEE *																		
YES																		
MALE	54	4.9	166	71	4.0	166	58	4.7	166	67	4.7	166	44	4.7	166	60	4.9	166
FEMALE	56	5.6	123	72	4.9	123	54	5.5	123	67	5.3	123	43	5.5	123	59	5.7	123
NO																		
MALE	53	2.1	851	71	1.8	851	53	2.1	851	65	2.1	851	41	2.0	851	57	2.2	851
FEMALE	54	2.1	946	69	1.8	946	50	2.1	946	66	2.0	946	39	1.9	946	56	2.1	946
WIRTE A PROGRAM TO PROCESS INFORMATION BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
YES																		
PUBLIC	54	3.8	269	70	3.3	269	55	3.7	269	66	3.7	269	42	3.7	269	58	3.9	269
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NO																		
PUBLIC	54	1.6	1657	70	1.3	1657	51	1.5	1657	65	1.5	1657	39	1.5	1657	56	1.6	1657
NONPUBLIC	56	5.5	138	76	4.5	138	58	5.3	138	72	5.0	138	47	5.1	138	62	5.5	138

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 20.2A - GRADE 7
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=1.96 FOR 1 TEST AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
WRITE A PROGRAM TO PROCESS INFORMATION - COMPARISONS						
YES/NO	0.275	0.416	1 217	0.421	0.970	0.718
COMPARISONS - RACE/ETHNICITY BY INSTRUCTIONAL ACTIVITY (Z=2.64 FOR 6 TESTS AT .05)						
YES						
WH/BL	1.036	1.732	2.250	1.825	1.729	1.722
WH/HISP	0.597	1.469	1.349	1.008	1.188	1.066
BL/HISP	-0.33	-0.16	-0.62	-0.60	-0.38	-0.47
NO						
WH/BL	2.699 *	4.390 *	5.318 *	2.796 *	4.579 *	3.581
WH/HISP	3.071 *	4.017 *	3.541 *	2.351	3.724 *	2.858
BL/HISP	0.506	-0.04	-1.08	-0.17	-0.35	-0.34
COMPARISONS - GENDER BY INSTRUCTIONAL ACTIVITY (Z=2.24 FOR 2 TESTS AT .05)						
YES						
M/F	-0.21	-0.18	0.637	-0.04	0.125	0.092
NO						
M/F	-0.26	0.470	0.911	-0.44	0.746	0.162
COMPARISONS - TYPE OF SCHOOL ATTENDED BY INSTRUCTIONAL ACTIVITY (Z=1.96 FOR 1 TEST AT .05)						
YES						
PUB/NPUB						
NO						
PUB/NPUB	-0.49	-1.33	-1.19	-1.28	-1.36	-1.08

* Statistically significant difference.

TABLE 21: AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES: GRADE 11
NUMBER OF MATH COURSES TAKEN

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
NUMBER OF MATH COURSES TAKEN																		
NOT REPORTED	32	3.0	328	43	2.9	302	24	2.6	375	44	3.1	342	30	2.8	375	34	3.1	375
ONE OR TWO	41	1.4	1615	55	1.3	1505	36	1.3	1945	56	1.4	1702	41	1.3	1945	46	1.5	1945
THREE OR FOUR	56	0.9	3919	68	0.8	3677	56	0.8	4737	73	0.8	4157	63	0.8	4737	63	0.9	4737
FIVE OR SIX	66	1.3	1523	74	1.0	1427	70	1.2	1803	84	1.1	1586	76	1.2	1803	76	1.3	1803
SEVEN OR MORE	76	4.6	102	77	3.9	99	81	4.0	127	91	3.4	105	80	4.2	127	83	4.2	127
TOTAL W/IN SUBSCALE	55	0.6	7487	66	0.5	7010	54	0.6	8987	71	0.6	7892	60	0.6	8987	62	0.6	8987
NUMBER OF MATH COURSES TAKEN BY RACE/ETHNICITY OF EXAMINEE *																		
NOT REPORTED																		
WHITE	37	5.0	129	50	4.3	120	30	4.3	150	49	5.0	131	35	4.5	150	39	5.0	150
BLACK	29	5.1	108	34	5.1	99	17	4.2	123	39	5.2	113	25	4.9	123	29	5.4	123
HISPANIC	24	5.7	73	37	6.5	69	19	5.4	83	37	6.2	79	24	5.8	83	27	6.4	83
ONE OR TWO																		
WHITE	43	1.8	968	58	1.6	917	41	1.7	1146	59	1.8	1014	46	1.8	1146	49	1.9	1146
BLACK	36	2.8	401	46	2.7	357	26	2.4	484	49	2.9	416	30	2.6	484	36	2.9	484
HISPANIC	37	4.0	205	47	4.0	186	27	3.4	249	49	4.1	215	35	3.7	249	38	4.1	249
THREE OR FOUR																		
WHITE	58	1.0	2910	70	0.9	2740	60	1.0	3490	76	0.9	3065	66	1.0	3490	67	1.0	3490
BLACK	44	2.3	575	59	2.2	535	36	2.1	709	63	2.3	625	46	2.2	709	50	2.4	709
HISPANIC	48	3.0	343	61	2.7	323	43	2.8	429	64	2.9	375	52	2.9	429	54	3.1	429
FIVE OR SIX																		
WHITE	69	1.5	1209	76	1.1	1125	72	1.4	1422	85	1.2	1249	78	1.3	1422	77	1.4	1422
BLACK	47	4.7	146	58	4.0	136	50	4.2	176	71	4.2	153	61	4.3	176	60	4.6	176
HISPANIC	60	5.6	95	67	4.4	91	59	5.2	116	78	4.8	103	66	5.1	116	67	5.6	116
SEVEN OR MORE																		
WHITE	75	5.5	77	78	4.3	76	80	4.7	97	92	3.6	81	79	4.9	97	83	4.9	97
BLACK	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
HISPANIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
NUMBER OF MATH COURSES TAKEN BY GENDER OF EXAMINEE																		
NOT REPORTED																		
MALE	32	3.7	207	44	3.5	192	24	3.2	235	44	3.8	218	30	3.5	235	34	3.9	235
FEMALE	31	5.0	121	41	5.0	110	26	4.5	140	45	5.1	124	30	4.8	140	34	5.2	140
ONE OR TWO																		
MALE	42	2.0	773	58	1.9	724	38	1.8	948	55	2.0	822	44	1.9	948	47	2.1	948
FEMALE	41	1.9	842	51	1.8	781	34	1.8	997	57	2.0	880	39	1.9	997	44	2.1	997
THREE OR FOUR																		
MALE	57	1.2	1910	68	1.1	1787	59	1.2	2315	73	1.2	2020	65	1.2	2315	65	1.3	2315
FEMALE	55	1.2	2009	67	1.1	1890	52	1.2	2422	74	1.1	2137	60	1.2	2422	62	1.3	2422
FIVE OR SIX																		
MALE	66	1.8	821	75	1.4	770	72	1.7	959	84	1.5	855	78	1.6	959	76	1.7	959
FEMALE	66	2.0	702	74	1.5	657	68	1.8	844	84	1.6	731	74	1.8	844	75	1.9	844
SEVEN OR MORE																		
MALE	75	6.0	57	73	5.7	57	83	4.8	70	89	4.8	57	82	5.4	70	83	5.5	70
FEMALE	78	7.2	45	82	5.3	42	79	6.7	57	93	4.8	48	78	6.5	57	83	6.5	57
NUMBER OF MATH COURSES TAKEN BY TYPE OF SCHOOL EXAMINEE ATTENDS *																		
NOT REPORTED																		
PUBLIC	31	3.0	318	43	2.9	296	24	2.7	363	44	3.1	331	30	2.9	363	34	3.2	363
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
ONE OR TWO																		
PUBLIC	41	1.4	1572	55	1.3	1465	36	1.3	1898	56	1.4	1661	42	1.4	1898	46	1.5	1898
NONPUBLIC	54	8.1	43	56	8.9	40	39	8.6	47	60	9.0	41	34	8.0	47	46	9.5	47
THREE OR FOUR																		
PUBLIC	56	0.9	3512	68	0.8	3309	56	0.9	4241	73	0.9	3729	63	0.9	4241	64	0.9	4241
NONPUBLIC	54	2.7	407	66	2.4	368	55	2.5	496	74	2.5	428	62	2.5	496	63	2.8	496
FIVE OR SIX																		
PUBLIC	66	1.4	1278	74	1.1	1199	71	1.3	1516	84	1.2	1335	76	1.3	1516	76	1.4	1516
NONPUBLIC	67	3.3	245	74	2.9	228	68	3.1	287	82	2.8	251	75	3.1	287	74	3.3	287
SEVEN OR MORE																		
PUBLIC	76	5.4	79	77	4.3	78	80	4.5	100	90	3.8	84	81	4.7	100	83	4.7	100
NONPUBLIC	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30

* Small subcategories were not included; so sample sizes may not match totals. See technical notes for discussion.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 21A - GRADE 11
Z TESTS FOR THE DIFFERENCE BETWEEN 2 MEANS (Z=2.81 FOR 10 TESTS AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE-MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
NUMBER OF MATH COURSE TAKEN COMPARISONS						
NT REPORTED/1-2	-2.81 *	-3.72 *	-4.07 *	-3.58 *	-3.49 *	-3.28
1-2/3-4	-8.87 *	-8.47 *	-12.6 *	-10.5 *	-13.3 *	-10.3
NT REPORTED/3-4	-7.70 *	-8.29 *	-11.3 *	-9.24 *	-10.8 *	-8.97
1-2/5-6	-13.0 *	-11.8 *	-19.1 *	-15.4 *	-19.1 *	-15.3
3-4/5-6	-6.62 *	-5.39 *	-9.86 *	-7.76 *	-9.15 *	-7.71
5-6/7&<	-2.06	-0.66	-2.54	-1.84	-0.96	-1.71
NT REPORTED/5-6	-10.5 *	-10.3 *	-15.7 *	-12.2 *	-14.7 *	-12.1
3-4/7&<	-4.33 *	-2.38	-6.13 *	-4.92 *	-4.11 *	-4.56
NT REPORTED-7&<	-8.04 *	-7.00 *	-11.7 *	-10.1 *	-9.79 *	-9.30
1-2/7&<	-7.24 *	-5.38 *	-10.5 *	-9.33 *	-8.78 *	-8.40
COMPARISONS - RACE/ETHNICITY BY NUMBER OF COURSES TAKEN (Z=2.86 FOR 12 TESTS AT .05)						
NOT REPORTED						
WH/BL	1.135	2.437	2.224	1.364	1.510	1.311
WH/HISP	1.745	1.628	1.616	1.547	1.542	1.463
BL/HISP	0.670	-0.44	-0.32	0.297	0.169	0.261
ONE OR TWO						
WH/BL	2.075	3.649 *	5.113 *	2.923 *	5.068 *	3.900
WH/HISP	1.444	2.584	3.715 *	2.220	2.725	2.507
BL/HISP	-0.12	-0.08	-0.21	0	-1.04	-0.44
THREE OR FOUR						
WH/BL	5.569 *	4.422 *	10.21 *	5.267 *	8.460 *	6.489
WH/HISP	3.345 *	3.278 *	5.578 *	3.973 *	4.628 *	3.925
BL/HISP	-0.88	-0.37	-2.10	-0.24	-1.69	-1.09
FIVE OR SIX						
WH/BL	4.385 *	4.375 *	5.012 *	3.301 *	3.880 *	3.620
WH/HISP	1.389	2.161	2.585	1.485	2.218	1.880
BL/HISP	-1.81	-1.38	-1.23	-1.09	-0.82	-0.92
SEVEN OR MORE						
WH/BL	-	-	-	-	-	-
WH/HISP	-	-	-	-	-	-
BL/HISP	-	-	-	-	-	-
COMPARISONS - GENDER BY NUMBER OF COURSES TAKEN (Z=2.576 FOR 5 TESTS AT .05)						
NOT REPORTED						
M/F	0.224	0.607	-0.36	-0.23	0	0.030
ONE OR TWO						
M/F	0.426	2.604 *	1.687	-0.66	2.153	0.984
THREE OR FOUR						
M/F	0.913	0.854	4.589 *	-0.68	2.826 *	1.736
FIVE OR SIX						
M/F	0.037	0.339	1.385	0	1.445	0.733
SEVEN OR MORE						
M/F	-0.41	-1.25	0.486	-0.58	0.471	-0.07
COMPARISONS - TYPE OF SCHOOL ATTENDED BY NUMBER OF COURSES TAKEN (Z=2.4 FOR 3 TESTS						
NOT REPORTED						
PUB/NPUB	-	-	-	-	-	-
ONE OR TWO						
PUB/NPUB	-1.62	-0.14	-0.36	-0.41	0.912	-0.06
THREE OR FOUR						
PUB/NPUB	0.701	0.796	0.113	-0.30	0.112	0.102
FIVE OR SIX						
PUB/NPUB	-0.36	0.031	0.825	0.690	0.501	0.612
SEVEN OR MORE						
PUB/NPUB	-	-	-	-	-	-

* Statistically significant difference.

TABLE 22 AVERAGE PERCENT CORRECT ON 1985-86 NAEP MATHEMATICS SUBSCALES TOTALED BY RACE, GENDER AND TYPE OF SCHOOL EXAMINEE ATTENDS

	FUNDAMENTAL METHODS			DATA ORGANIZATION & INTERPRETATION			MEASUREMENT			NUMBERS & OPERATIONS: KNOWLEDGE/SKILLS			NUMBERS & OPERATIONS: HIGHER LEVEL APPLICATIONS			TOTAL ACROSS SUBSCALES		
	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N	AVG %	SE	N
GRADE 3																		
RACE/ETHNICITY OF EXAMINEE																		
WHITE	41	0 5	5896	60	0.7	4534	46	0.6	6653	50	0.7	5938	55	0.7	5945	48	0.8	6653
BLACK	25	0 9	1847	39	1.3	1376	31	1.0	2043	34	1.2	1830	38	1.3	1824	32	1 3	2044
HISPANIC	27	0.9	1676	42	1.4	1244	33	1.1	1859	39	1.3	1672	40	1.3	1640	35	1.4	1859
OTHER	32	2.1	342	48	3.0	257	36	2.5	384	46	2.9	342	45	2.7	355	39	3.1	384
GENDER OF EXAMINEE																		
MALE	37	0.6	4981	55	0.8	3725	43	0.7	5584	46	0.7	5002	51	0.8	4969	44	0.8	5584
FEMALE	37	0 6	4780	55	0.8	3686	41	0.7	5355	47	0.8	4780	51	0.8	4795	44	0.8	5356
TYPE OF SCHOOL EXAMINEE ATTENDS																		
PUBLIC	37	0.4	8893	55	0.6	6752	42	0 5	9969	46	0.6	8910	50	0.6	8893	44	0.6	9970
NONPUBLIC	41	1.4	855	58	1.9	648	47	1.6	955	48	1.8	860	54	1.8	857	48	2.0	955
OTHER	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	37	0 4	9761	55	0.6	7411	42	0.5	10939	46	0.5	9782	51	0.5	9764	44	0.6	10940
GRADE 7																		
RACE/ETHNICITY OF EXAMINEE																		
WHITE	50	0 7	5585	64	0.8	4241	45	0.7	7178	59	0.7	6720	40	0.7	7179	49	0.7	7179
BLACK	38	1 1	1984	50	1.4	1494	27	1.1	2525	42	1.2	2367	25	1.0	2526	33	1.2	2526
HISPANIC	38	1.2	1592	51	1 6	1237	31	1.2	2027	44	1.3	1916	28	1.2	2027	36	1.4	2027
OTHER	49	2 7	369	60	3 2	267	40	2.6	452	53	2.7	417	37	2.6	452	44	2.9	452
GENDER OF EXAMINEE																		
MALE	46	0 7	4834	61	0 9	3593	41	0.7	6143	53	0 7	5759	36	0.7	6143	44	0.8	6143
FEMALE	48	0.7	4696	60	0.9	3646	40	0 7	6039	56	0.7	5661	37	0.7	6041	46	0.8	6041
TYPE OF SCHOOL EXAMINEE ATTENDS																		
PUBLIC	47	0.5	8794	60	0 6	6705	40	0.5	11244	54	0 5	10548	36	0.5	11246	44	0.6	11246
NONPUBLIC	50	1.9	732	67	2 3	530	46	1.9	932	64	1.9	866	43	1.9	932	51	2.0	932
OTHER	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30	-	-	N<30
TOTAL W/IN SUBSCALE	47	0 5	9530	61	0 6	7239	40	0.5	12182	55	0 5	11420	37	0.5	12184	45	0.6	12184
GRADE 11 *																		
RACE/ETHNICITY OF EXAMINEE																		
WHITE	58	0 7	5293	69	0 6	4978	59	0.7	6305	75	0.7	5540	65	0 7	6305	66	0.8	6305
BLACK	41	1.6	1238	53	1 5	1134	34	1.4	1501	58	1.6	1316	42	1.5	1501	45	1.6	1501
HISPANIC	44	2 1	721	55	1.9	674	39	1.9	884	59	2.0	776	46	2.0	884	49	2.1	884
OTHER	56	3 5	235	66	3 2	224	59	3.0	297	73	3.1	260	65	3.1	297	66	3.3	297
GENDER OF EXAMINEE																		
MALE	55	0 9	3768	67	0 8	3530	57	0 8	4527	71	0.8	3972	62	0.8	4527	63	0 9	4527
FEMALE	54	0 9	3719	65	0.9	3480	51	0.8	4460	72	0.8	3920	58	0.9	4460	60	0.9	4460
TYPE OF SCHOOL EXAMINEE ATTENDS																		
PUBLIC	54	0 7	6759	65	0 6	6347	53	0.6	8118	71	0.6	7140	60	0.6	8118	61	0.7	8118
NONPUBLIC	59	2.0	728	68	1 8	663	59	1.9	869	76	1 8	752	65	1.9	869	66	2.0	869
TOTAL W/IN SUBSCALE	55	0.6	7487	66	0.5	7010	54	0 6	8987	71	0.6	7892	60	0 6	8987	62	0 6	8987

* Results presented represent only those students currently enrolled in a math class.

SOURCE: NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS - 1985-86 MATHEMATICS ASSESSMENT

TABLE 22a: MARGINAL TOTALS BY GRADE LEVEL
Z TESTS FOR DIFF BETWEEN 2 MEANS (Z=2.576 FOR 5 TESTS AT .05)

	FNDMNTL METHODS	ORGNIZ& INTERP	MEASURE- MENT	NUMBERS& OPRATNS	HGH ORDR SKILLS	TOT
GRADE 3 - MARGINAL COMPARISONS: RACE OF EXAMINEE						
WHITE/BLACK	15.28 *	13.84 *	12.37 *	10.99 *	11.86 *	10.70
BLACK/HISPANIC	-1.63	-1.45	-1.38	-2.69	-1.03	-1.69
WHITE/HISPANIC	12.57 *	11.61 *	10.14 *	7.210 *	10.41 *	8.221
GRADE 3 - MARGINAL COMPARISONS: GENDER OF EXAMINEE						
M/F	-0.97	-0.44	2.098	-1.11	-0.09	-0.08
GRADE 3 - MARGINAL COMPARISONS: TYPE OF SCHOOL ATTENDED						
PUB/NPUB	-3.29 *	-1.56	-3.02 *	-0.78	-1.98	-1.73
GRADE 7 - MARGINAL COMPARISONS: RACE OF EXAMINEE						
WHITE/BLACK	9.586 *	8.634 *	14.21 *	12.75 *	12.69 *	11.72
BLACK/HISPANIC	-0.36	-0.23	-2.61	-1.14	-2.27	-1.89
WHITE/HISPANIC	8.316 *	7.797 *	9.829 *	10.37 *	8.809 *	8.442
GRADE 7 - MARGINAL COMPARISONS: GENDER OF EXAMINEE						
M/F	-2.24	0.080	0.393	-3.23 *	-0.09	-1.24
GRADE 7 - MARGINAL COMPARISONS: TYPE OF SCHOOL ATTENDED						
PUB/NPUB	-1.85	-2.87 *	-3.38 *	-5.16 *	-3.65 *	-3.15
GRADE 11 - MARGINAL COMPARISONS: RACE OF EXAMINEE						
WHITE/BLACK	9.589 *	9.759 *	16.12 *	9.695 *	14.04 *	11.22
BLACK/HISPANIC	-1.11	-0.90	-2.11	-0.35	-1.98	-1.23
WHITE/HISPANIC	6.292 *	6.776 *	10.21 *	7.355 *	8.721 *	7.521
GRADE 11 - MARGINAL COMPARISONS: GENDER OF EXAMINEE						
M/F	0.955	1.834	4.746 *	-0.85	3.712 *	1.956
GRADE 11 - MARGINAL COMPARISONS: TYPE OF SCHOOL ATTENDED						
PUB/NPUB	-2.50	-1.54	-2.92 *	-2.88 *	-2.59 *	-2.24

* Statistically significant difference.

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